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1/29/07
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January 24, 2007

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PHASE I TRAFFIC AND PARKING ASSESSMENT FOR THE PASEO DE LA PLAYA PROJECT - CITY OF SANTA BARBARA

Associated Transportation Engineers (ATE) has completed the following Phase I traffic and parking assessment for the Paseo de la Playa Project, located in the City of Santa Barbara. It is our understanding that this Phase I study will be submitted to the City of Santa Barbara to assist City staff in their review of the traffic and parking issues associated with the project and to help determine the requirements for the Phase II analysis. This report addresses the City comments presented in the August 22, 2006 Development Application Review.

PROJECT DESCRIPTION

The Paseo de la Playa Project is comprised of three sites, designated as Sites 1 through 3. The following text provides a description of each site.

Site 1: Site 1 is located at 101 Garden Street on the southern corner of the Garden Street/ Yanonali Street intersection. The project proposes to remove the existing industrial uses on the site and construct 91 townhouse/condominium units. Vehicular access is proposed via driveways on Garden Street, Yanonali Street and Santa Barbara Street. The site plan is illustrated in the attached Figure 1.

Site 2: Site 2 is located on 222 Santa Barbara Street north of the Santa Barbara Street/Yanonali Street intersection. The project proposes to remove the two existing single family dwelling units and construct 16 studio/one-bedroom units on the site. These units are proposed to be affordable housing for hotel workers under supervision of the Santa Barbara Housing Authority. Access is proposed via one driveway on Santa Barbara Street. The site plan is illustrated in the attached Figure 2.

Site 3: Site 3 is located on Yanonali Street on the northeastern corner of the Garden Street Yanonali Street intersection. The project proposes to remove the existing industrial uses and the tree service business and construct a 19,466 square foot (S.F.) market, 4,747 S.F. of retail uses, 3,036 S.F. of restaurant space, 5,250 S.F. of office space, a 11,903 S.F. mini-storage facility, a 156 S.F. managers office and a 1,825 S.F. manager apartment. The total gross commercial space is 44,558 S.F. Vehicular access to the site is proposed via two driveways on Yanonali Street. The site plan is shown in the attached Figure 3.

PROJECT TRIP GENERATION

Existing Uses

The existing uses on Site 1 generally consist of contractor storage facilities for metal work, gardening, concrete, masonry, and roofing. There is also an auto repair shop located on the site. The existing uses on Site 2 consist of two residential units. The existing uses on Site 3 consist of an industrial storage area and a tree service business.

ATE staff conducted traffic counts at the six driveways that serve the industrial uses on Site 1 and Site 3. The driveways are located on Garden Street, Santa Barbara Street and Yanonali Street, as illustrated in the attached Figure 5. The counts were conducted for two weekday periods (between Tuesday, July 5th and Thursday July 7th) during the peak A.M.(7-9 A.M.) and P.M. (4-6 P.M.) periods. Counts were also conducted on Sunday, July 10th, during the peak afternoon peak period (1-4 P.M.). Worksheets showing the traffic count data collected at each driveway are attached to this letter.

The traffic count data was recorded every 15 minutes and then analyzed to determine the highest one-hour volume for the driveways during the weekday A.M. and P.M. and Sunday afternoon peak periods. Table 1 summarizes the weekday peak hour data and Table 2 shows the Sunday peak hour data.

Table 1
Paseo De La Playa Project - Weekday Peak Hour Driveway Count Data

Weekday	A.M. Peak Hour (7:00 - 8:00 A.M.) [a]			P.M. Peak Hour (4:00 - 5:00 P.M.)		
	Inbound	Outbound	Total	Inbound	Outbound	Total
Tuesday/Thursday - July 5 and 7, 2005	52	52	104	46	41	87
Wednesday - July 6, 2005	55	68	123	47	41	88
2-Day Average	***54***	***60***	***114***	***47***	***41***	***88***

[a] 7:15 - 8:15 A.M. on Tuesday/Thursday, 7:00 - 8:00 A.M. on Wednesday

The data presented in Table 1 show that the existing uses located on Site 1 and Site 3 generate an average of 114 A.M. peak hour trips (54 inbound/60 outbound) and 88 P.M. peak hour trips (47 inbound/41 outbound) on weekdays.

Table 2
Paseo De La Playa Project - Summer Sunday Peak Hour Driveway Count Data

Weekday	Afternoon Peak Hour (2:15 - 3:15 P.M.)		
	Inbound	Outbound	Total
Sunday - July 10, 2005	9	6	15

The data presented in Table 2 show that the existing uses located on Site 1 and Site 3 generate 15 afternoon peak hour trips (9 inbound/6 outbound) on Summer Sundays.

In addition, existing peak hour traffic volumes generated by the two residential units located on Site 2 were estimated using average weekday rates contained in Transportation Engineers' (ITE) Trip Generation report[1] for Single Family Detached Housing. The trip generation estimates for Site 2 are shown in Table 3, along with the peak hour trip generation of all parcels comprising the Paseo de la Playa Project. The existing weekday A.M. and P.M. peak hour traffic volumes at the study-area intersections are illustrated in Figures 1.1-1, 2.1-1, and 3.1-1. The existing weekend peak hour traffic volumes are illustrated in Figures 1.1-2, 2.1-2, and 3.1-2.

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1 Trip Generation, Institute of Transportation Engineers, 7th Edition, 2003.

Table 3
Paseo De La Playa Project - Existing Traffic Volumes

Land Use	Size	Weekday				Weekend	
		A.M. Peak Hour		P.M. Peak Hour		Peak Hour	
		Rate	Trips	Rate	Trips	Rate	Trips
Site 1 Industrial	N/A	N/A	41	N/A	36	N/A	4
Site 2 Single Family Dwelling	2 Units	0.75	2	1.01	2	0.67	1
Site 3 Industrial	N/A	N/A	83	N/A	52	N/A	11
Total Sites 1,2 & 3			**126**		**90**		**16**

Table 3 indicates that the parcels comprising the Paseo de la Playa currently generate a total of 126 A.M. peak hour trips and 90 P.M. peak hour trips during weekdays, and 16 afternoon peak hour trips during Summer Sundays.

Proposed Uses

Trip generation estimates were developed for each of the project components based on trip generation rates contained in the ITE Trip Generation report. The trip generation for each proposed use is discussed below.

Site 1 - 91 Residential Units: ITE average rates for Residential Condominium/Townhouse were used for this component of the project. The ITE description of Residential Condominium/Townhouse category is as follows: "Residential Condominium/Townhouses are defined as ownership units that have at least one other owned unit within the same building structure. Both condominiums and townhouses are included in this land use."

ATE conducted trip generation surveys at several condominium developments in the Santa Barbara and Goleta areas to determine the trip generation rate specific to the Santa Barbara Area. The data collected indicates a P.M. peak hour trip rate of 0.54 peak hour trips per unit. This rate is comparable to the rate described in the ITE Trip Generation manual of 0.52 peak hour trips per unit. The data collected is included in the technical appendix for reference.

Site 2 - 16 studio/one-bedroom units: ITE average rates for Apartments were used for this component of the project. The ITE description of Apartments category is as follows: "Apartments are rental dwelling units that are located within the same building with at least three other dwellings, for example quadraplexes and all types of apartment buildings".

Site 3 - 44,558 S.F. Commercial Space:

Retail. The equation rates listed in the ITE Trip Generation manual (7th Edition) for Specialty Retail Centers (Land Use Code #814) were used for the retail component. Because no A.M. peak data is available in the ITE Trip Generation manual, 3% of the ADT was assumed per the San Diego Association of Governments (SANDAG) Trip Generation Manual[2]. The Weekend P.M. peak rate was assumed to be 10% of the ADT rate from SANDAG.

Office. The ITE equation rates for General Offices (Land Use Code #710) were used for the office component. The trip rates presented in the ITE Trip Generation Report (7th Edition and 5th Edition) for General Office were used for this component of the project. The equation rates from the 7th Edition ITE report were used to estimate A.M. peak hour trips. The equation rates from the 5th Edition ITE report were used to estimate P.M. peak hour trips.

Market. The ITE average rates for Supermarkets (Land Use Code #850) were used for the market component of the project.

Restaurant. ITE average rates for High-Turnover Sit-Down Restaurants (Land Use Code #932) were used for the restaurant component of the project. The rates per 1,000 s.f. of building area were used.

Mini-Storage. ITE average rates for Mini-Warehouses (Land Use Code #151) were used for the mini-storage component of the project.

A portion of the trips generated by the market, retail and restaurant components will be pass-by or linked trips rather than primary trips. Primary trips are made with the sole purpose of visiting the store, such as patrons traveling from home to the market to make a purchase and then traveling back home again. Pass-by trips and linked trips already exist on the adjacent street system and would stop at the site during their primary trip, for example, drivers traveling on Yanonali Street who would stop to pick up an item from the store on their way home from work. The average pass-by factor contained in the ITE trip generation handbook for shopping centers is 34%. Furthermore the pass-by factor presented in the SANDAG manual for shopping centers is 40%. The ITE pass-by factor for High-Turnover Sit-Down Restaurants is 43%. A more conservative pass-by factor of 15% was applied to the market, retail, and restaurant components to reflect the more regional draw due to the project's location, and the relatively low traffic volumes on Yanonali Street adjacent to the site.

Table 4 shows the trip generation estimates developed for the retail, office, mini-warehouse and residential components and the total project.

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2 San Diego Traffic Generators, San Diego Association of Governments, 2002

Table 4
Project Trip Generation

Land Use	Size[a]	Pass-by Factor	Weekday				Weekend	
			A.M. Peak Hour		P.M. Peak Hour		Peak Hour	
			Rate[b]	Trips	Rate[b]	Trips	Rate[b]	Trips
Non-Residential								
Market	19,466 S.F.	15%	3.25	54	10.45	173	10.76	178
Retail	4,747 S.F.	15%	1.52	6	6.92	28	5.07	20
Restaurant	3,036 S.F.	15%	11.52	30	10.92	28	20.00	52
Office	5,406 S.F.	-	3.36	18	4.00	22	0.65	4
Mini-Storage	11,903 S.F.	-	0.15	2	0.26	3	0.30	4
Total Non-Residential	44,558 S.F.			110		254		258
Residential								
Condominiums	91 Units	-	0.44	40	0.52	47	0.45	41
Apartments	16 Units	-	0.53	8	0.62	10	0.51	8
Total Project				**158**		**311**		**307**

[a] Gross square footage for buildings.

The data presented in Table 4 show that the non-residential components of the project would generate 110 A.M. peak hour trips and 254 P.M. peak hour trips during weekdays, and 258 afternoon peak hour trips on Summer Sundays. The residential component would generate 48 A.M. peak hour trips and 57 P.M. peak hour trips during weekdays, and 49 afternoon peak hour trips on Summer Sundays. Overall, the combined project would generate 158 A.M. peak hour trips and 311 P.M. peak hour trips during weekdays, and 307 afternoon peak hour trips on Summer Sundays.

Net Project-Added Traffic Volumes

The net-added project traffic volumes were developed by subtracting the traffic volumes generated by the existing industrial and residential uses from the traffic volumes generated by the proposed project components. The net-added traffic volumes are shown in Table 5.

Table 5
Existing and Proposed Project Trip Generation Comparison

Land Use	Weekday A.M. Peak Hour Trips	Weekday P.M. Peak Hour Trips	Summer Sunday Afternoon Peak Hour Trips
Site 1			
Existing Land Uses	-41	-36	-4
Proposed Project	+40	47	41
Site 2			
Existing Land Uses	-2	-2	-1
Proposed Project	8	10	8
Site 3			
Existing Land Uses	-82	-52	-11
Proposed Project	110	254	258
Net Change In Traffic	**+33**	**+221**	**+291**

The data in Table 5 indicate that the project would result in a net addition of 42 A.M. peak hour trips and 221 P.M. peak hour trips during weekdays, and 291 afternoon peak hour trips during the Summer Sundays.

PROJECT TRIP DISTRIBUTION

The A.M. and P.M. peak hour trips associated with the existing industrial uses and each of the project components were distributed onto the study-area street network based on the percentages shown in Table 6 and illustrated in Figures 1.1, 1.2, 2.1, 2.2, 3.1, 3.2, 3.3, 3.4, 3.5 and 3.6. These percentages were developed considering area population, surrounding land uses, existing traffic patterns and probable orientation of each project trip type. The trip distribution for the retail and market components assume a regional draw due to the project's location adjacent to U.S. 101. The trip distribution was sent to the City and approved by staff.

Table 6
Peak Hour Trip Distribution Percentages

Origin/Destination	Direction	Sites 1& 2 Residential	Site 3 Retail/Market	Sites 1 & 3 Industrial/ Mini-Warehouse	Site 3 Office
Local Waterfront	—	5%	20%	2%	5%
Garden St	North	10%	10%	6%	10%
Yanonali St	West	-	4%	-	-
State St	North	10%	5%	15%	10%
Calle Cesar Chavez	North	5%	5%	3%	5%
Haley St./Gutierrez St	East	5%	3%	2%	5%
Haley St./Gutierrez St	West	10%	3%	2%	10%
Cabrillo Blvd	East	5%	7%	2%	5%
Cabrillo Blvd	West	5%	8%	4%	5%
U.S. 101	North	35%	25%	40%	35%
U.S. 101	South	10%	10%	24%	10%
TOTAL		**100%**	**100%**	**100%**	**100%**

It is the City's policy to assign project traffic through adjacent intersections to a point where less than 5 peak hour trips are added to determine the potential traffic impacts of proposed developments. This approach provides statistical certainty in determining the intersections which could potentially be impacted by the project. The following section identifies the potentially impacted intersections. In response to City DART comments, all project traffic was assigned to the adjacent intersections along the U.S. 101/Garden Street corridor.

NET PROJECT-ADDED INTERSECTION PEAK HOUR TRIPS

Table 7 summarizes the net peak hour trips which would be added to the critical intersections in the project area during the weekday A.M. and P.M. peak hours and the Summer Sunday afternoon peak hour. Figures 1.2-1, 2.2-1, 3.2-1, 3.3-1, 3.4-1, 3.5-1, and 3.6-1 illustrate the weekday A.M. and P.M. peak hour project generated traffic by the specific land uses proposed for each site. Figures 1.2-2, 2.2-2, 3.2-2, 3,3-2, 3.4-2, 3.5-2, and 3.6-2 illustrate the weekend peak hour project generated traffic by each land use for each site. Figures 1.3, 2.3, and 3.7 illustrate the weekday A.M. and P.M. peak hour net project generated traffic by site. Figures 1.4, 2.4, and 3.8 illustrate the weekend peak hour net project generated traffic by site. Figure 4.1 illustrates the weekday A.M. and P.M. peak hour net project generated traffic for all three sites, and Figure 4.2 illustrates the weekend peak hour net generated traffic for all three sites.

Table 7
Net Project-Added Peak Hour Trips

Intersection	Weekday A.M. Peak Hour Number of Trips	Weekday P.M. Peak Hour Number of Trips	Summer Sunday Peak Hour Number of Trips
State Street/Haley Street	<5 PHT	14 PHT	21 PHT
State Street/Gutierrez Street	<5 PHT	6 PHT	21 PHT
State Street/Yanonali Street	11 PHT	54 PHT	76 PHT
State Street/Cabrillo Boulevard	6 PHT	19 PHT	25 PHT
Garden Street/Cota Street	8 PHT	27 PHT	29 PHT
Garden Street/Haley Street	15 PHT	45 PHT	43 PHT
Garden Street/Gutierrez Street	24 PHT	52 PHT	60 PHT
Garden Street/U.S. 101 Northbound Ramps	15 PHT	90 PHT	110 PHT
Garden Street/U.S. 101 Southbound Ramps	5 PHT	116 PHT	166 PHT
Garden Street/Yanonali Street	45 PHT	216 PHT	256 PHT
Garden Street/Cabrillo Boulevard	12 PHT	35 PHT	47 PHT
Calle Cesar Chavez/Gutierrez Street	<5 PHT	5 PHT	10 PHT
Calle Cesar Chavez/Montecito Street	<5 PHT	<5 PHT	<5 PHT
Calle Cesar Chavez/Yanonali Street	<5 PHT	<5 PHT	<5 PHT
Calle Cesar Chavez/Cabrillo Boulevard	7 PHT	19 PHT	20 PHT
Castillo Street/Cabrillo Boulevard	9 PHT	20 PHT	23 PHT
Calle Puerto Vallarta/Cabrillo Boulevard	6 PHT	21 PHT	20 PHT
Milpas Street/Cabrillo Boulevard	7 PHT	15 PHT	20 PHT

The data presented in Table 7 show that the project would have the potential to generate impacts at thirteen intersections during the A.M. peak hour, all eighteen intersections during the weekday P.M. peak hour, and sixteen intersections during the Sunday Afternoon peak hour. The traffic generated by the project will therefore require more in-depth study of potential project impacts at these locations in the Phase II study that will be completed as part of the project's environmental review process.

Site Access

Site 1: Vehicular access to Site 1 is proposed via driveways on Garden Street, Yanonali Street and Santa Barbara Street. The driveway on Garden street is proposed at the existing intersection that provides access to the industrial uses east and west of Garden Street. The segment of Garden Street south of Yanonali Street, which includes the intersection, was previously constructed to City standards to provide access to the site, and contains two lanes in each direction, a raised median, Class II bike lanes and left-turn pockets at the intersection.

At the request of City staff, the need for a traffic signal at the Garden Street/Project Driveway intersection was evaluated. It was found that the existing + project P.M. peak hour traffic volumes would not satisfy *Warrant 3 - Peak Hour* of the *MUTCD 2003 Caltrans Supplement*[3] (signal warrant worksheets are attached). The warrant data indicates that the project would not trigger the need for a traffic signal due to the low side street turning volumes.

The condominium complex proposed on Site 1 is expected to generate a total of 47 P.M. peak hour trips (32 PHT inbound and 15 PHT outbound). The traffic distribution pattern shown in Table 6 indicates that approximately 10% to 15% of traffic would originate from Cabrillo Boulevard and other areas south of the project. The expected turning volume at the northbound left-turn bay is thus 5 PHT or less. The existing northbound left-turn pocket on Garden Street at the proposed driveway contains approximately 70 feet of storage (three vehicles). This storage length is sufficient to accommodate the expected turning volume (5 PHT or less) at this location.

Site 2: Vehicular access to Site 2 would be provided via one driveway on Santa Barbara Street that provides access to the parking area on the site. This driveway is expected to accommodate the project generated traffic volumes (8 A.M. PHT and 10 P.M. PHT).

Site 3: Vehicular access to Site 3 is proposed via two driveways on Yanonali Street. The first driveway would be located approximately 200 feet east of Garden Street and the second driveway would be located 380 feet east of Garden Street. The driveways would be 28 feet wide and would accommodate simultaneous ingress and egress movements as well as delivery truck movements.

Site 3 is expected to generate 123 inbound trips and 131 outbound trips during the P.M. peak hour. Based on these volumes, there would be potential for queuing on-site and on Yanonali Street, as the single driveway would focus all project traffic at one loading point. The two driveways proposed for the site on Yanonali Street would therefore be warranted. Levels of service and delay calculations were completed for the two driveways using the Highway Capacity Manual methodology for stop controlled intersections (attached). Driveway split percentages were determined relative to the location of the parking spaces on-site (assumes 40% at the western driveway and 60% at the eastern driveway). The calculations show that the driveways on Yanonali Street would operate in the LOS A-B range based on the forecast delays. The calculations also show the vehicle queuing at the driveways would not be longer

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3 MUTCD 2003 Caltrans Supplement, May, 2004.

than one vehicle for inbound or outbound movements. Figure 6 (attached) illustrates the driveway split and volumes.

A review of the existing roadway configuration on Yanonali Street shows that the westerly driveway can be accommodated at the proposed location 200 feet east of Garden Street. The westbound left-turn lane on Yanonali Street extends approximately 95 feet east of the intersection and then transitions to the centerline of the street in approximately 60 feet. Based on these measurements, there is 45 feet provided between the end of the transition of the westbound left-turn lane and the westerly project driveway. The spacing between the westerly driveway and the easterly driveway is approximately 180 feet. The spacing between the driveways and the Garden Street intersection is sufficient to accommodate the expected eastbound left-turn volume from Yanonali Street into the site (75 peak hour trips split between the two driveways).

It is also noted that the left-turn volume using the westbound left-turn lane at the Yanonali/Garden intersection is very low, with 13 left-turns during the weekday peak and 10 left-turns during the Sunday peak hour. Given these low volumes, there would be minimal vehicle queuing in the westbound left-turn lane, which would further enhance the access into the project site at the westerly driveway.

As requested by City staff, a capacity analysis for the left-turn lanes at the Garden Street/Yanonali Street intersection was performed. A Synchro analysis is attached showing the left-turn storage length, estimated queue lengths at each left-turn, and overall intersection level of service. The analysis indicates the intersection has adequate capacity, with no left-turn queues exceeding the provided storage length.

The site plan indicates that the delivery area will be provided at the rear of the market building. The site plan shows that the delivery area has been designed to accommodate the City's standard fire truck turning movements. Truck turn analyses performed by ATE using AutoTURN indicate that the site would be able to handle internal movements associated with deliveries made by a Caltrans California Legal 65-foot tractor-trailer[4]. The truck turns are indicated in Figure 3.

PARKING ANALYSIS

Parking Supply and Allocation

The proposed parking supply for Site 1 is 205 parking spaces. For the 71 market rate units, a total of 142 spaces are reserved (two parking spaces per unit). For the 20 affordable units, a total of 40 spaces are reserved (two parking space per unit). Additionally, a total of 23 spaces are provided for guest parking.

The proposed parking supply for Site 2 is 12 parking spaces, all of which are covered.

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4 Highway Design Manual, California Department of Transportation, September 2006.

The proposed parking supply for Site 3 is 140 parking spaces, of which 137 spaces are reserved for the commercial component, 2 spaces are reserved for the mini-storage and 1 space is reserved for the on-site manager apartment. In addition, a total of 20 bicycle parking spaces would be provided on the Site 3.

City Zoning Ordinance Requirements

The City's Zoning Ordinance parking ratios for each of the project components are summarized below:

Site 1:	*Condominium* -	2 spaces/2- and 3-bedroom unit 1 guest space/4 units
Site 2:	*Studio Apartment* -	1 space/unit
	One-Bedroom Unit -	1 space/unit
Site 3:	*Commercial* -	1 space/250 net S.F.
	Office -	1 space/250 net S.F.
	Mini-Warehouse -	1 space/5,000 net S.F.

Based on these ratios, the project's Zoning Ordinance parking requirements were calculated as shown below in Table 4. The City's parking requirements for the commercial and office buildings are based on net square footage. The size of the project components of Site 3 are therefore expressed in net square foot.

Table 8
City of Santa Barbara Zoning Ordinance Parking Requirements

Land Use	Size	City Parking Ratio	Parking Space Requirement	Parking Supply
Site 1 Condominiums	91 Units	2 spaces/2 & 3 bedroom 1 guest space/4 units	182 spaces 23 spaces **205 spaces**	205 spaces
Site 2 Studio One-Bedroom Unit	8 Units 8 Units	1 space/unit 1 space/unit	8 spaces 8 spaces **16 spaces**	12 spaces
Site 3 Market Retail/Service Comm. Restaurant (a) Office Mini-Storage Manager Apartment	18,669 S.F. 4,553 S.F. 69 seats 5,184 S.F. 11,415 S.F. 1 Unit	1 space/250 S.F. 1 space/250 S.F. 1/3 seats 1 space/250 S.F. 1 space/5,000 S.F. 1 space provided	75 spaces 18 spaces 23 spaces 21 spaces 2 spaces 1 space **140 spaces**	140 spaces

(a) Santa Barbara Municipal Code requires the larger of 1 spaces/250 S.F. or 1/3 space per seat for restaurants.

The data presented in Table 8 show that the City Zoning Ordinance parking requirement for Site 1 is 205 parking spaces. The proposed parking supply for Site 1 is 205 spaces, which meets the City's requirement. The parking requirement for Site 2 is 16 parking spaces. The proposed parking supply for Site 2 is 12 parking spaces, which is 4 spaces less than the City's requirement. The parking requirement for Site 3 is 140 parking spaces. The proposed parking supply for Site 3 is 140 parking spaces, which meets the City's requirement.

Parking Demand Analysis

The actual parking demand generated by the project may be greater than or less than the number of spaces required by the City's Zoning Ordinance. Also, the City's Zoning Ordinance parking requirements for the individual project components are based on rates for "stand-alone" land uses. These parking ratios therefore do not consider the concept of "shared parking" that occurs in developments containing a mix of land uses.

The shared parking theory recognizes that the peak parking accumulations for individual land uses occur at different times of the day, and that parking spaces can be shared by different uses at different times of the day and evening.

In the case of the proposed project, Sites 1 and 2 contain a single use, while Site 3 contains several different uses. The shared parking analysis will therefore be performed for Site 3 only.

The ITE Parking Generation[5] and the ULI Shared Parking Manual[6] provide specific procedures for computing the parking space needs for mixed-use sites with residences and commercial uses. The first step in completing the parking analysis is to calculate the gross project parking demands for each component. For this analysis, the following parking demand rates were used:

Condominiums. As requested by City staff, the rate presented in the ITE parking generation report for Single Family Dwelling (1.83 spaces/unit) is used for the condominium units. The ITE rates are based on counts of all observed vehicles at the study sites, and thus include both resident and guest parking.

Studio Apartment/One Bedroom Units. The intended occupants for the affordable units proposed on Site 2 would be employees of waterfront hotels, and the units would be under the supervision of the Santa Barbara Housing Authority. The parking demands for the affordable units proposed on Site 2 were estimated based on parking demands observed at the 41-unit Casa De Las Fuentes, which is an affordable unit complex for down-town employees also run by the Santa Barbara Housing Authority, and is thus similar in nature. The parking demand observed at this complex before 7:00 A.M. was 24 vehicles. The parking demand rate is therefore 0.59 space/unit (24 spaces/41 units).

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5 Parking Generation, Institute of Transportation Engineers, 3rd Edition, 2004

6 Shared Parking, Urban Land Institute, 2nd Edition, 2005.

Both weekday and weekend parking demand estimates were developed for the commercial uses proposed on Site 3 to determine the highest parking demand that would occur on the site, as shown below.

Market: The average weekday rate presented in the ITE parking generation report for Supermarkets is 4.36 spaces/1,000 S.F. The average weekend rate for Supermarkets is 4.75 spaces/1,000 S.F.

Retail: The average non-December weekday rate presented in the ITE parking generation report for Shopping Centers is 3.02 spaces/1,000 S.F. The average non-December weekend rate for Shopping Centers is 2.97 spaces/1,000 S.F.

Restaurant: The average weekday rate presented in the ITE parking generation report for High-Turnover Sit Down Restaurants is 10.1 spaces/1,000 S.F. The average weekend rate is 13.5 spaces/1,000 S.F.

Office: The average weekday rate presented in the ITE parking generation report for Offices is 2.84 spaces/1,000 S.F. The weekend rate for Offices is not given. The average weekend rate for Offices (<25 KSF) presented in the ULI Shared Parking report, which is 0.35 space/1,000 S.F., was therefore used for this study.

Mini-Storage: The average weekday rate presented in the ITE parking generation report for Mini-Warehouses is 0.16 space/1,000 S.F. The average weekend rate for Mini-Warehouses is 0.06 space/1,000 S.F.

Table 9 shows the gross parking demand calculations completed for the individual project components based on the rates reviewed above.

Table 9
Project Peak Parking Demand Calculations for Individual Components

Land Use	Size	Weekday Rate	Weekday Parking Demand	Weekend Rate	Weekend Parking Demand	Parking Supply
Site 1						
Condominiums	91 Units	1.83	167 spaces	n/a	n/a	205 spaces
Site 2						
Apartment	16 Units	0.58	10 spaces	n/a	n/a	12 spaces
Site 3						
Market	19,466 S.F.	4.36	85 spaces	4.75	92 spaces	
Retail	4,747 S.F.	3.02	14 spaces	2.97	13 spaces	
Restaurant	3,036 S.F.	10.1	31 spaces	13.5	41 spaces	
Office	5,406 S.F.	2.84	15 spaces	0.35	3 spaces	
Mini-Storage	11,903 S.F.	0.16	2 spaces	0.06	1 space	
Manager Apartment(a)	1 Unit	n/a	1 space	n/a	1 space	
			148 spaces		151 spaces	140 spaces

(a) Assumes 1 reserved space for the manager apartment.

The data in Table 9 indicates that the proposed parking supply on Site 1 (205 parking spaces) would accommodate the parking demand of 167 spaces. The proposed parking supply on Site 2 (12 parking spaces) would accommodate the parking demand of 10 spaces.

The next step in completing the shared parking analysis involves calculating shared parking adjustments for Site 3. The ULI and ITE reports provide hourly parking accumulation percentages for each of the individual site uses. These accumulation percentages are then added for each hour, and the overall peak parking hour is determined. The analysis implements a captive ratio, which assumes that a certain percentage of a secondary use on a site with multiple uses will be utilized by the primary use, therefore avoiding double-counting the parking demands of the secondary use. For example, the captive ratio assumes that a percentage of restaurant guests would already be working on-site in the office space or would be linked to the market or retail uses and would not require additional parking spaces. This is similar to a mixed-use reduction used for trip generation estimates. The analysis assumes a captive ratio of 10% for the Retail and Restaurant components of the project.

Table 10 shows the parking requirements for each project component during the combined peak period, as well as the total requirement for the site. A worksheet showing the hourly parking calculations is attached for reference.

Table 10
Site 3 Shared Parking Demand Calculations

Land Use	Size	Peak Period	Weekday Parking Demand	Peak Period	Weekend Parking Demand	Parking Supply
Site 3						
Market	19,466 S.F.	1:00 P.M.	85 spaces	1:00 P.M.	92 spaces	
Retail	4,747 S.F.	1:00 P.M.	13 spaces	1:00 P.M.	11 spaces	
Restaurant	3,036 S.F.	1:00 P.M.	25 spaces	1:00 P.M.	31 spaces	
Office	5,406 S.F.	1:00 P.M.	12 spaces	1:00 P.M.	2 spaces	
Mini-Storage	11,903 S.F.	1:00 P.M.	1 spaces	1:00 P.M.	0 space	
Manager Apart.(a)	1 Unit	n/a	1 space	n/a	1 space	
			137 spaces		138 spaces	140 spaces

(a) Assumes 1 reserved space for the manager apartment.

The shared parking analysis indicates that Site 3 would experience the highest parking demand at 1:00 P.M. with a combined parking demand of 137 spaces during weekdays, and a combined parking demand of 138 spaces during weekends. The proposed parking supply of 140 spaces would therefore accommodate the parking demands of the project.

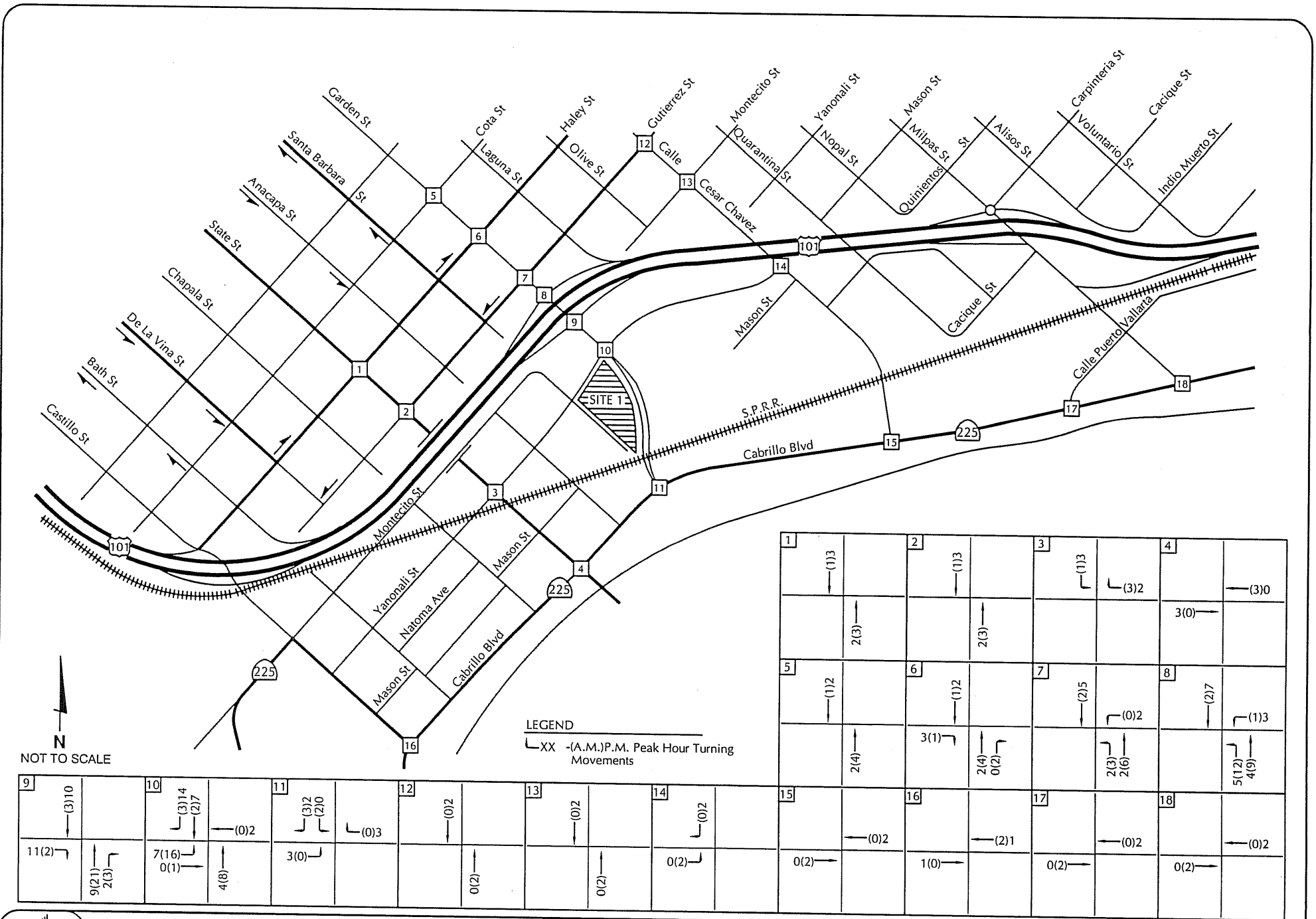
This concludes our Phase 1 trip generation and parking analysis for the Paseo de la Playa.

Associated Transportation Engineers

Scott A. Schell, AICP
Principal Transportation Planner

SAS/JSL

Attachments

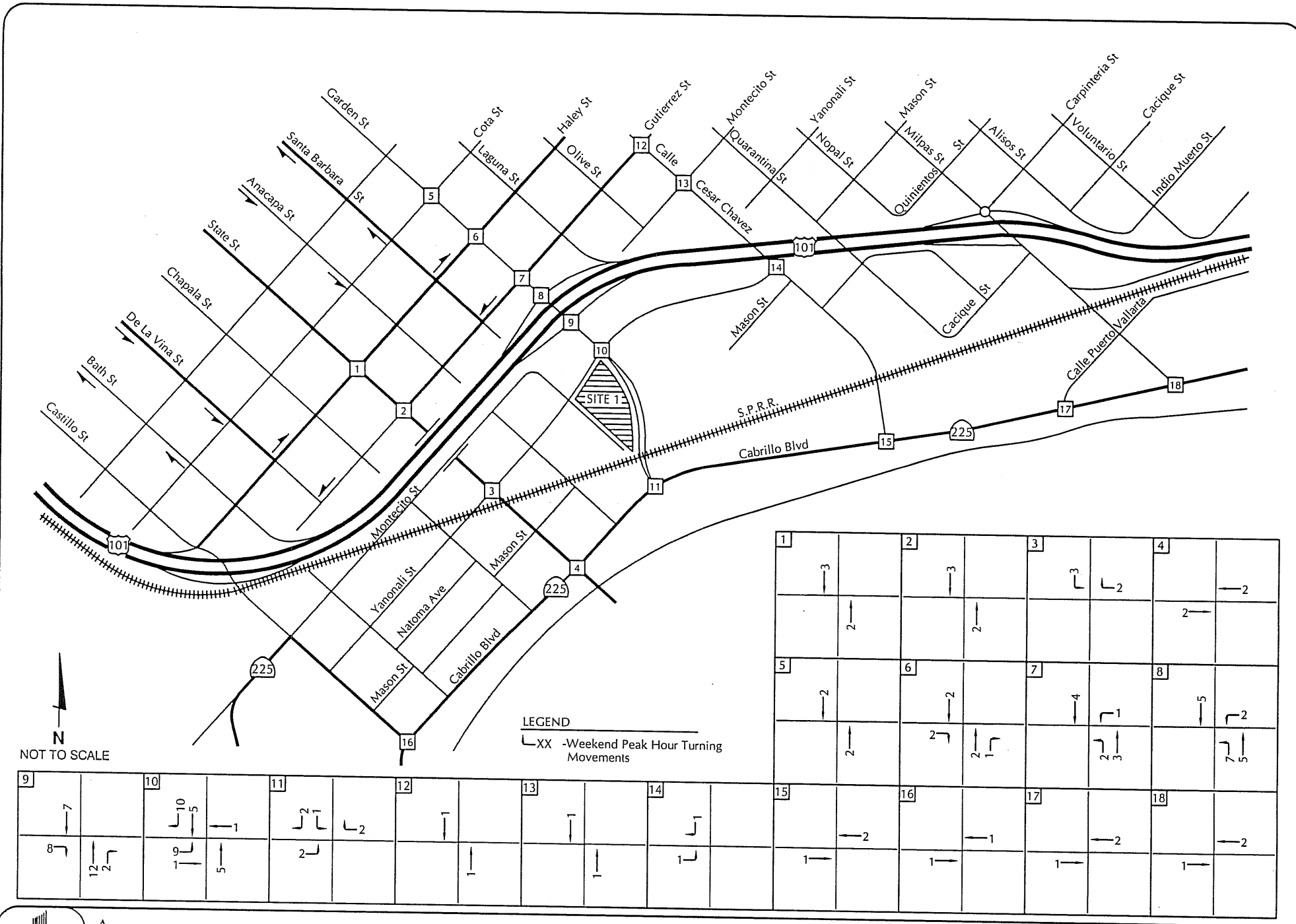


ASSOCIATED TRANSPORTATION ENGINEERS

SITE 1 WEEKDAY PEAK HOUR PROJECT TRIP ASSIGNMENTS - RESIDENTIAL

FIGURE 1.2-1

JSL #04013

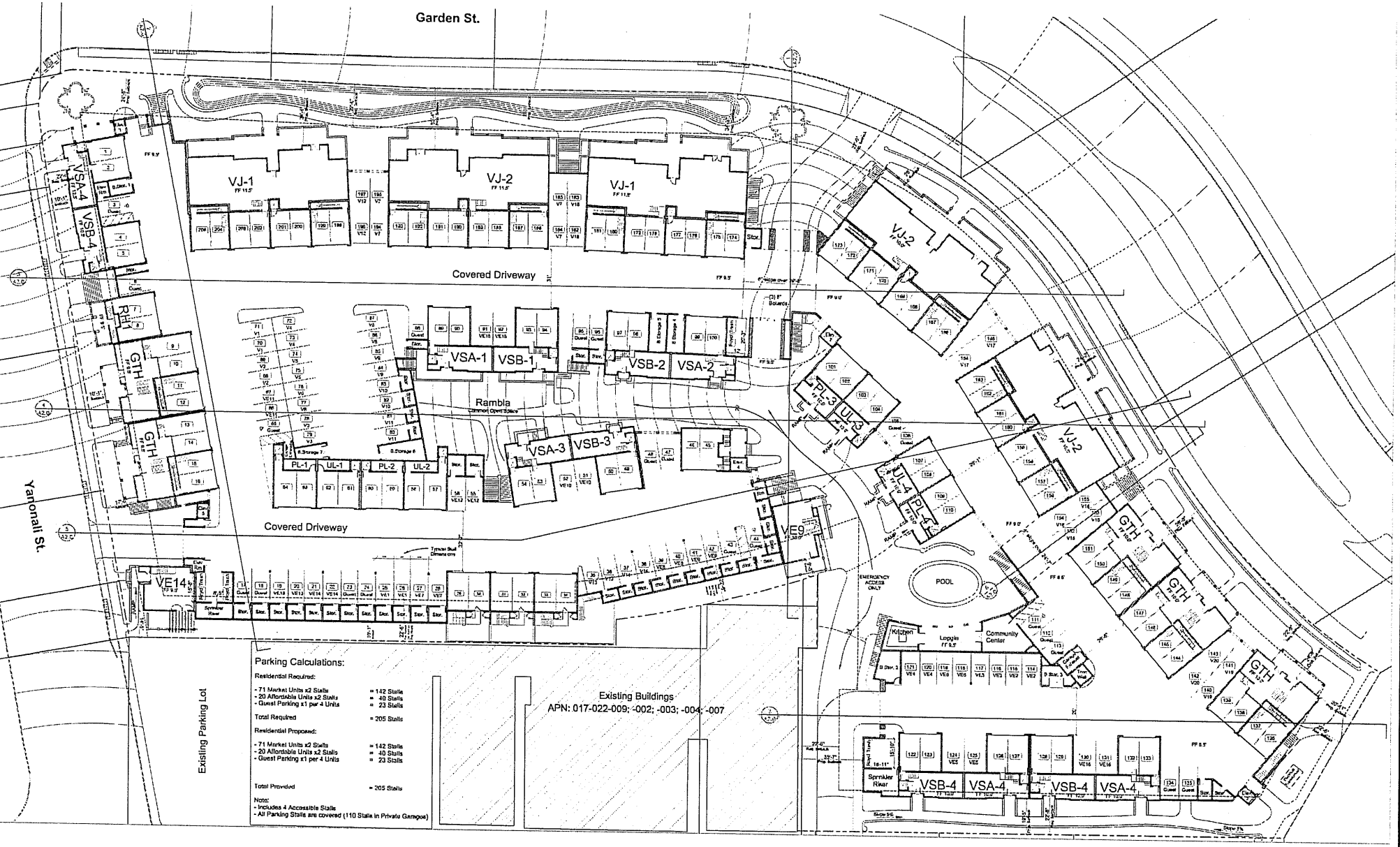


ASSOCIATED TRANSPORTATION ENGINEERS

SITE 1 WEEKEND PEAK HOUR PROJECT TRIP ASSIGNMENTS - RESIDENTIAL

FIGURE 1.2-2

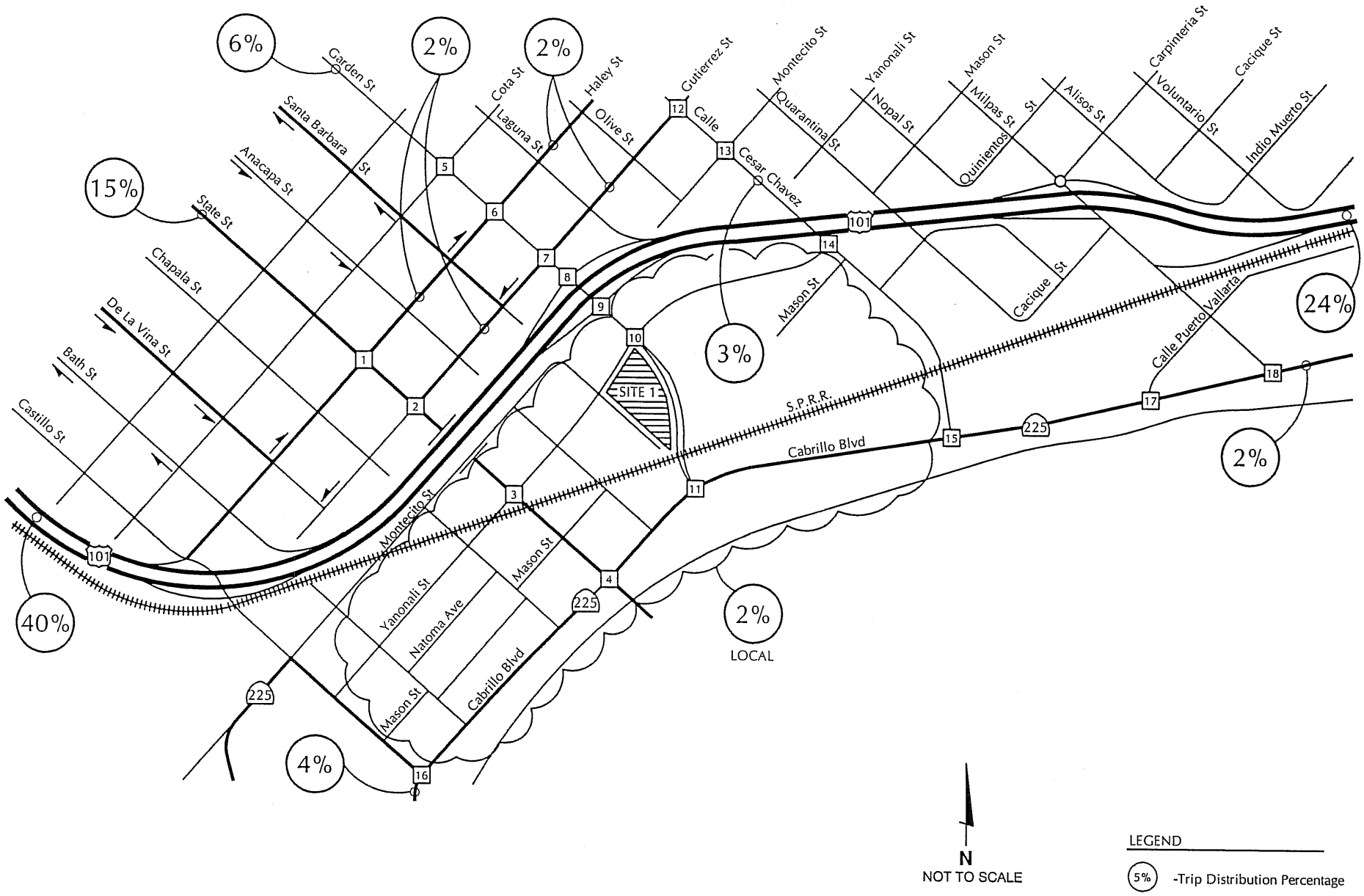
JSL #04013



ASSOCIATED TRANSPORTATION ENGINEERS

PROJECT SITE PLAN - SITE 1

FIGURE 1

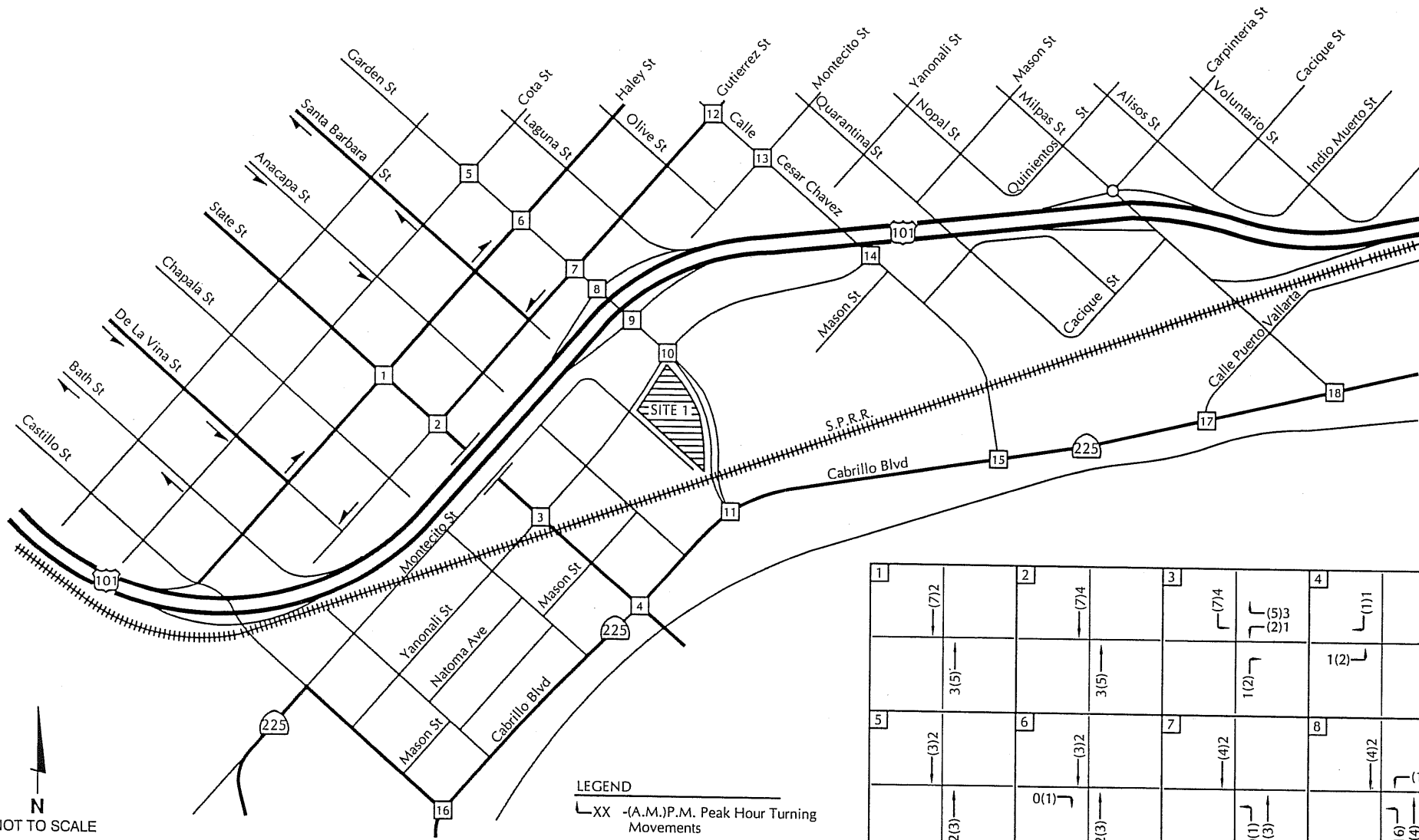


ASSOCIATED TRANSPORTATION ENGINEERS

SITE 1 EXISTING TRIP DISTRIBUTION - INDUSTRIAL

FIGURE 1.1

JSL #04013

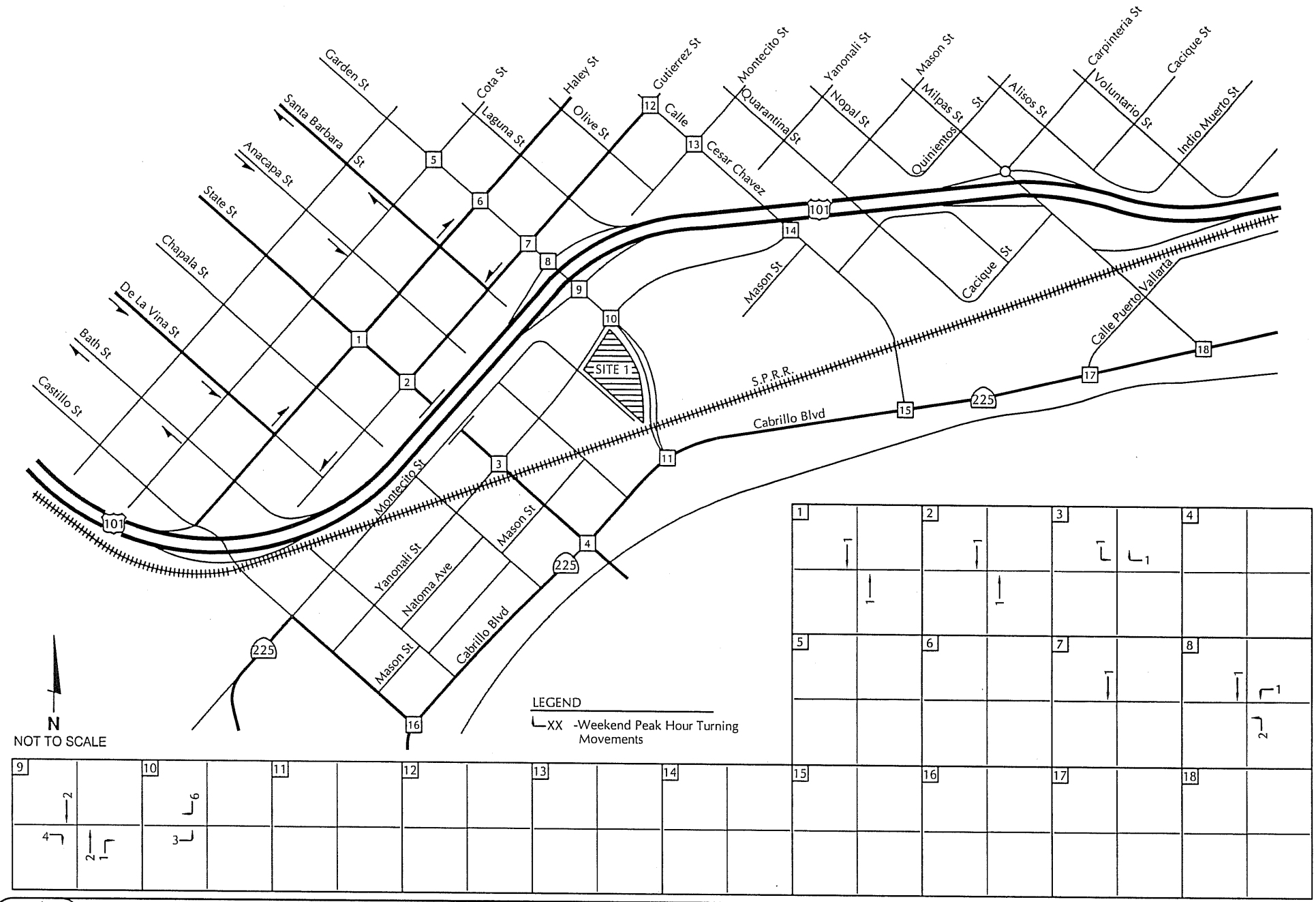


ASSOCIATED TRANSPORTATION ENGINEERS

SITE 1 EXISTING WEEKDAY PEAK HOUR TRIP ASSIGNMENTS - INDUSTRIAL

FIGURE 1.1-1

JSL #04013

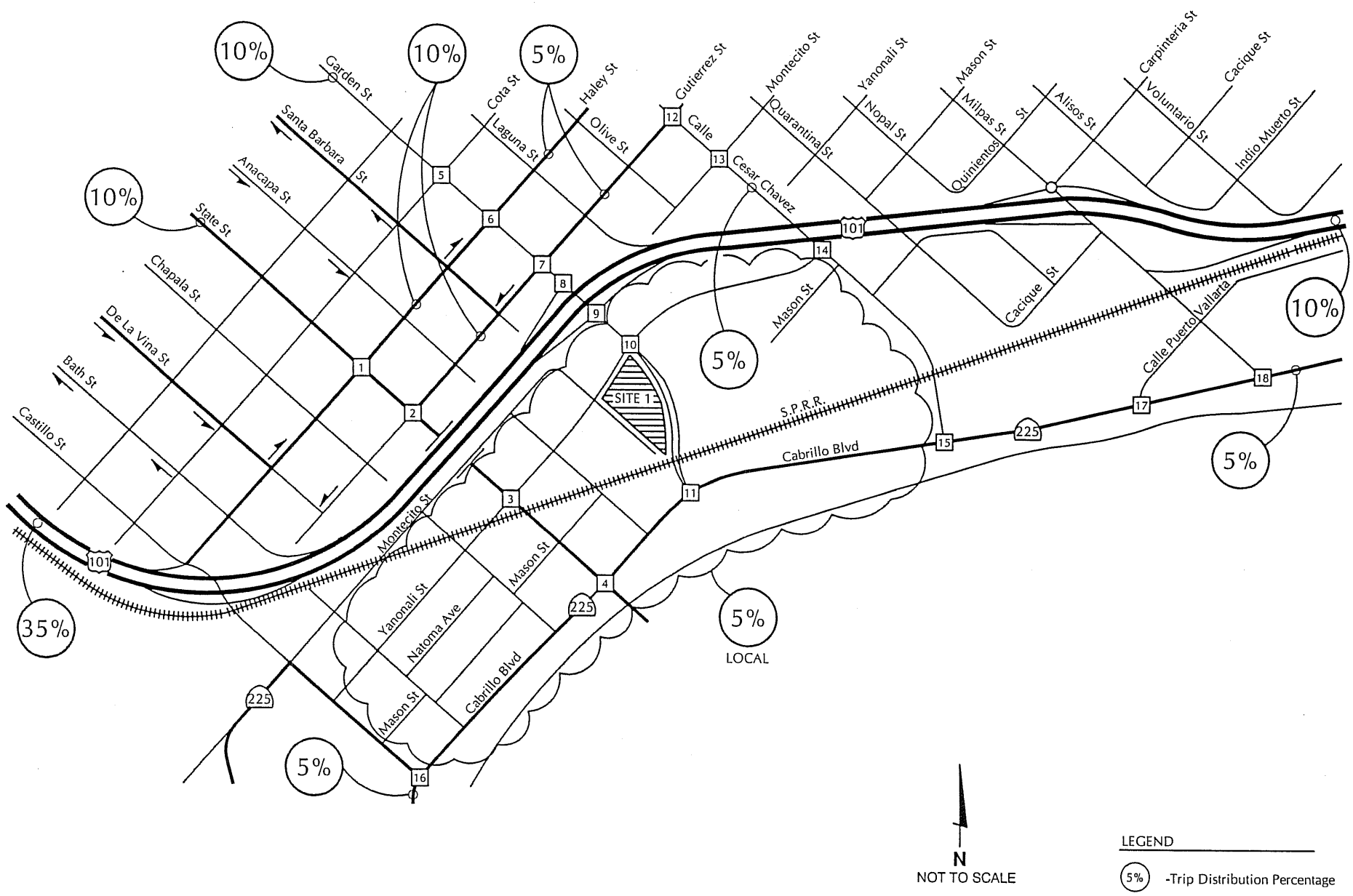


ASSOCIATED TRANSPORTATION ENGINEERS

SITE 1 EXISTING WEEKEND PEAK HOUR TRIP ASSIGNMENTS - INDUSTRIAL

FIGURE 1.1-2

JSL #04013

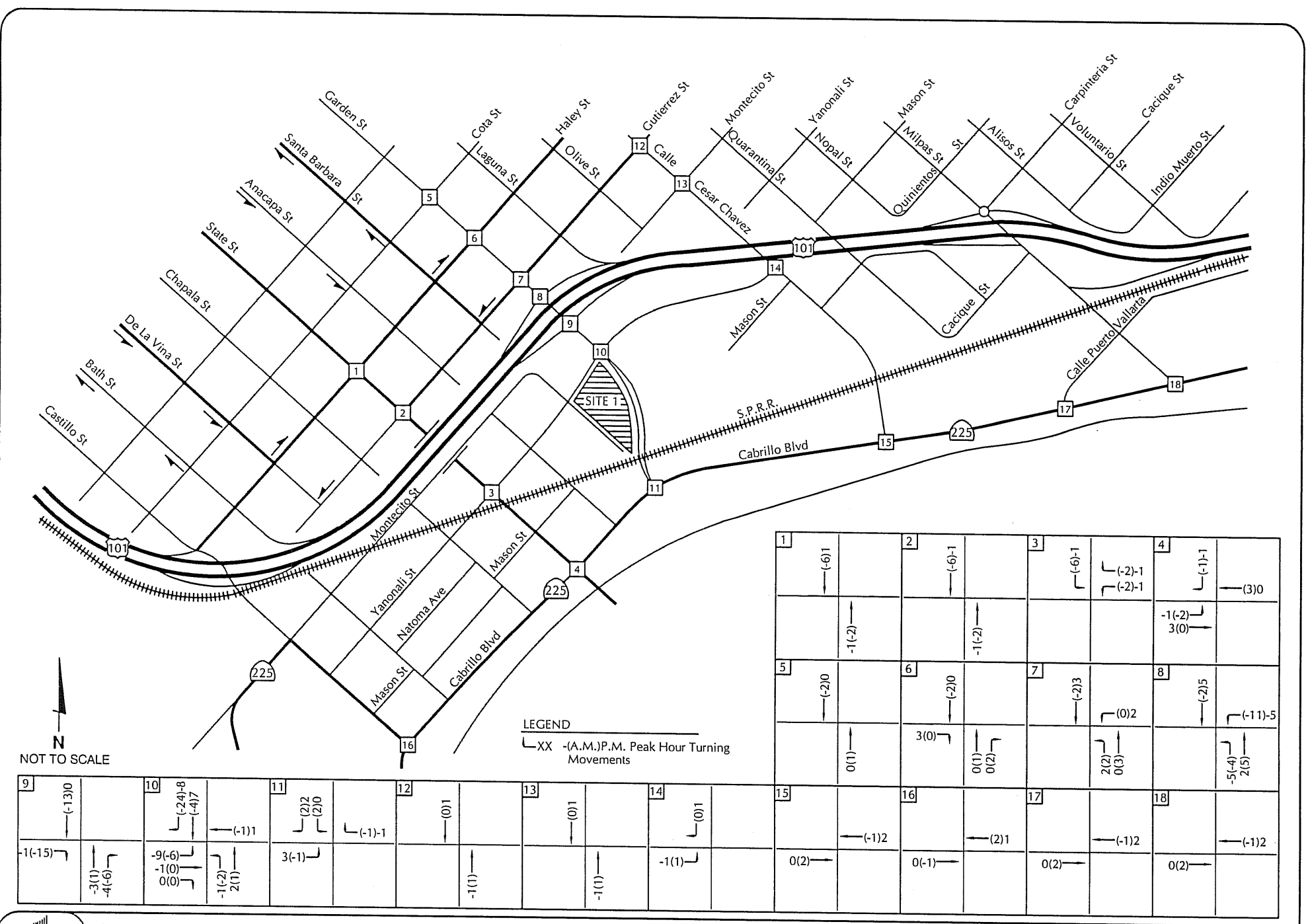


ASSOCIATED TRANSPORTATION ENGINEERS

SITE 1 PROJECT TRIP DISTRIBUTION - RESIDENTIAL

FIGURE 1.2

JSL #04013



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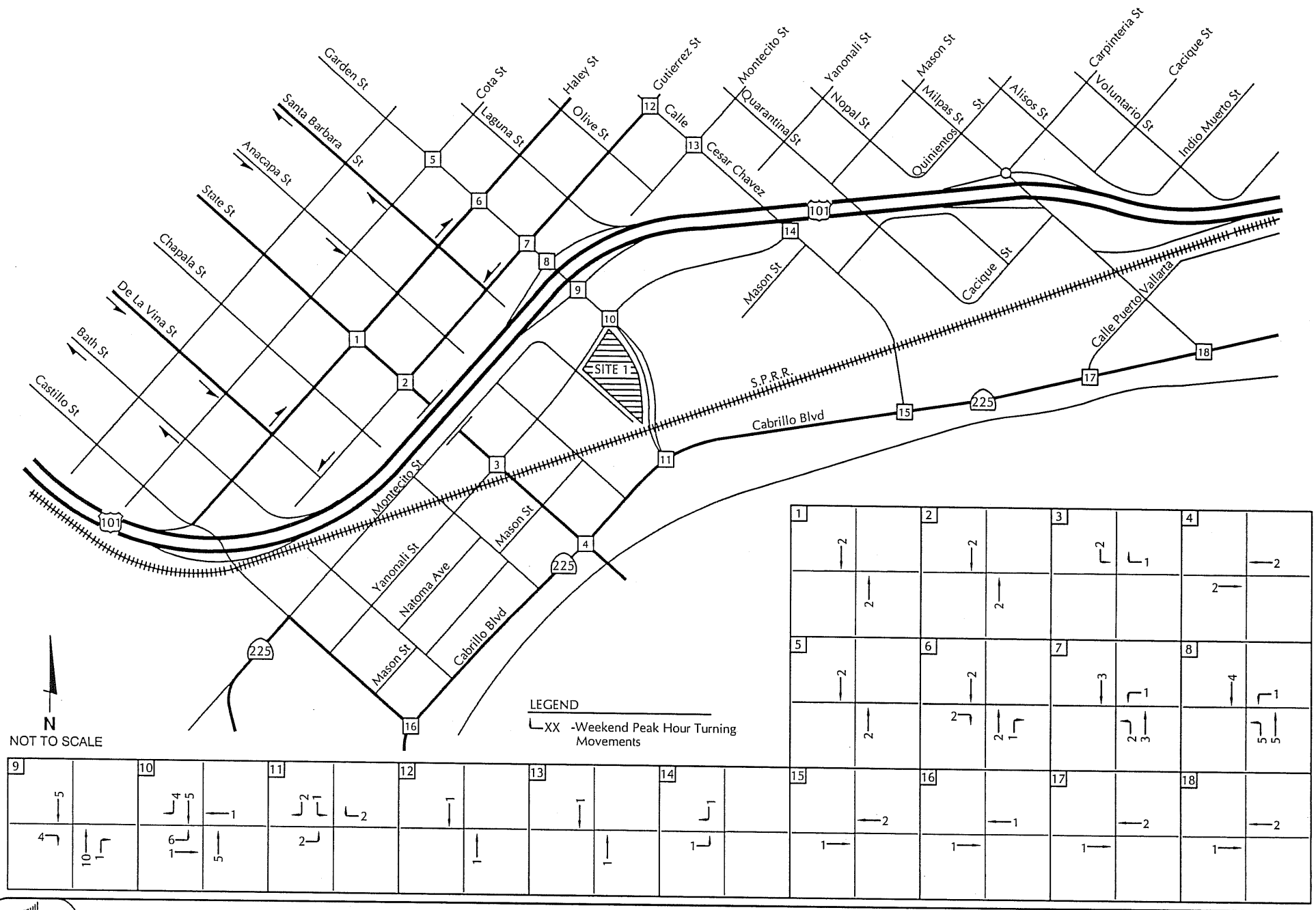
SITE 1 WEEKDAY PEAK HOUR NET PROJECT TRIP ASSIGNMENTS

FIGURE 1.3

JSL #04013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Anacapa St
State St
Chapala St
De La Vina St
Bath St
Castillo St
Cota St
Laguna St
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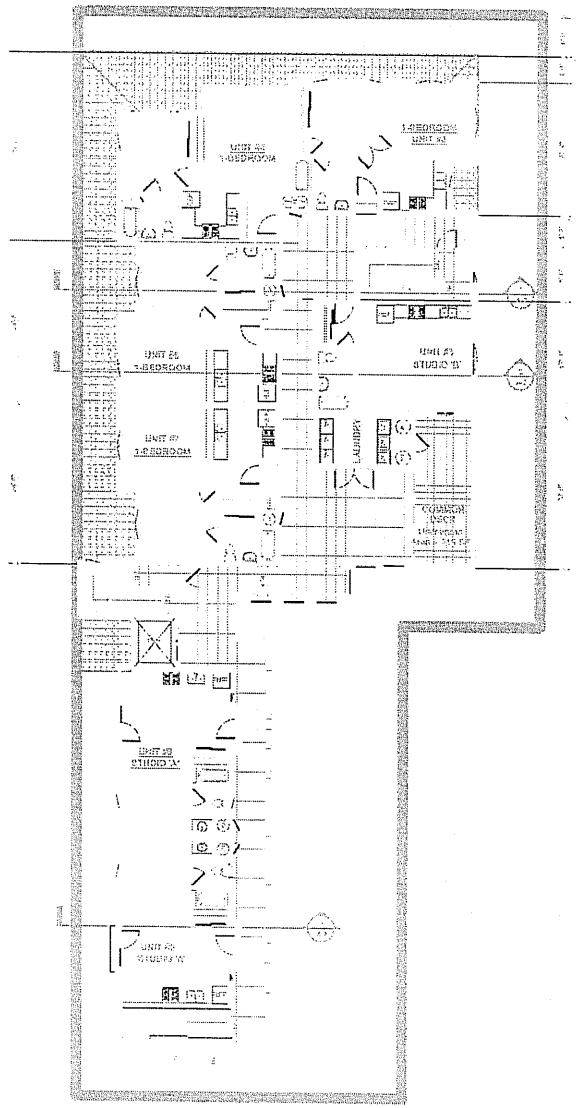
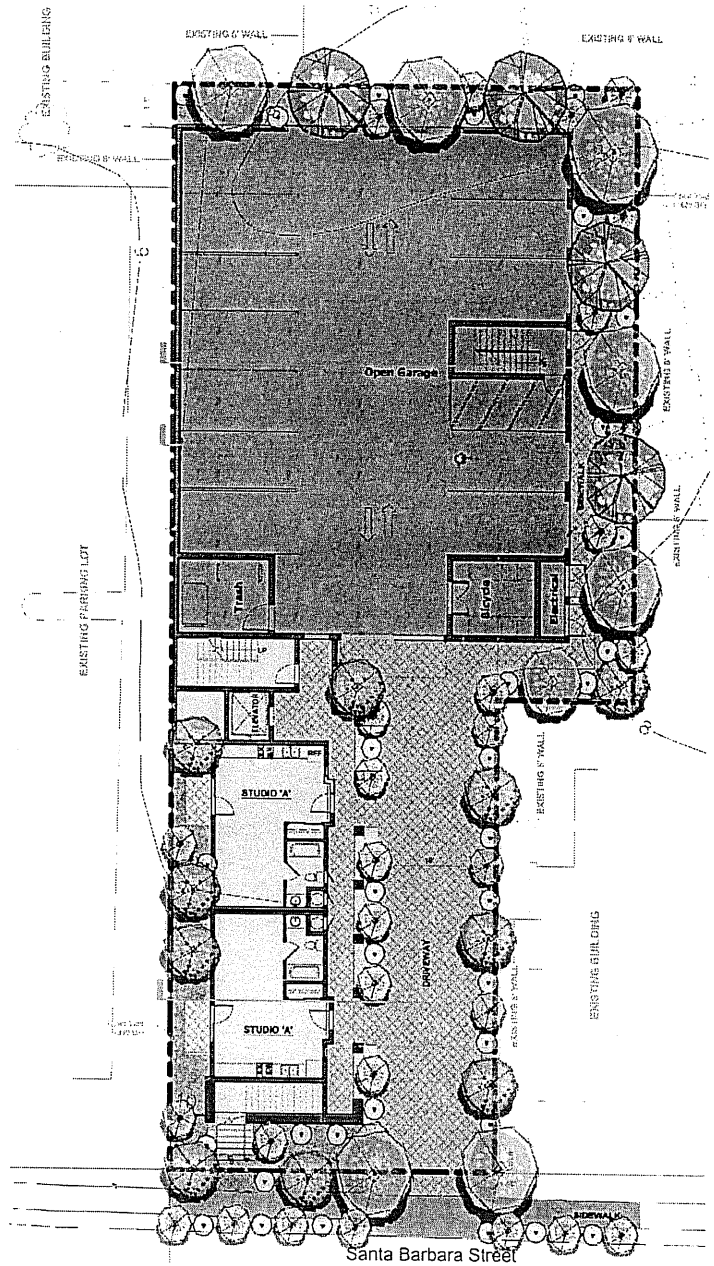
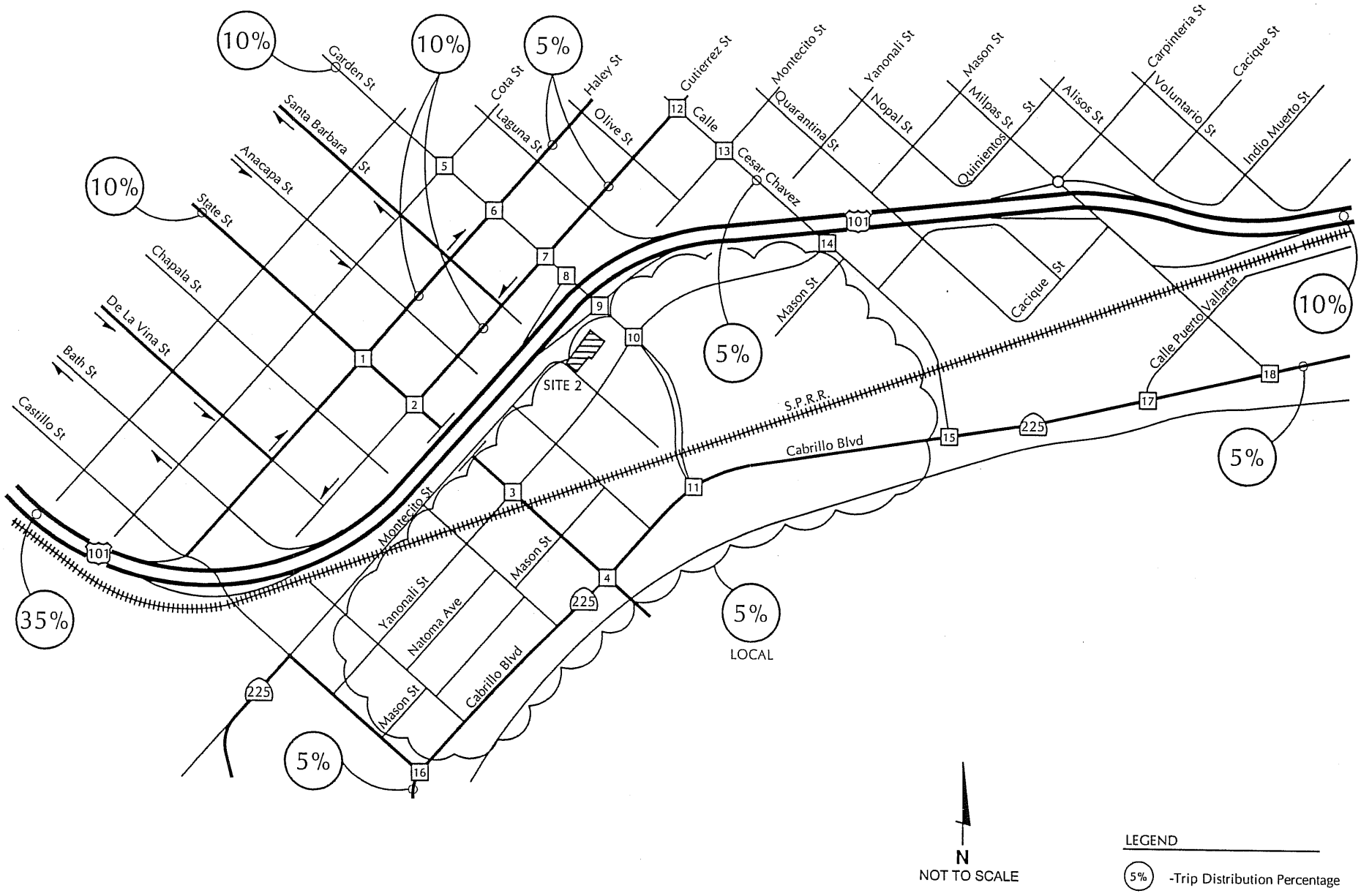
Olive St
Gutierrez St
Calle
Montecito St
Quarantina St
Yanonali St
Nopal St
Mason St
Milpas St
Quinientos St
Alisos St
Carpinteria St
Voluntario St
Cacique St
Indio Muerto St
Cesar Chavez
101
SITE 1
S.P.R.R.
Cabrillo Blvd
Calle Puerto Vallarta
225
Natoma Ave
N
NOT TO SCALE
LEGEND
XX -Weekend Peak Hour Turning Movements



Second Floor Plan



Site Plan

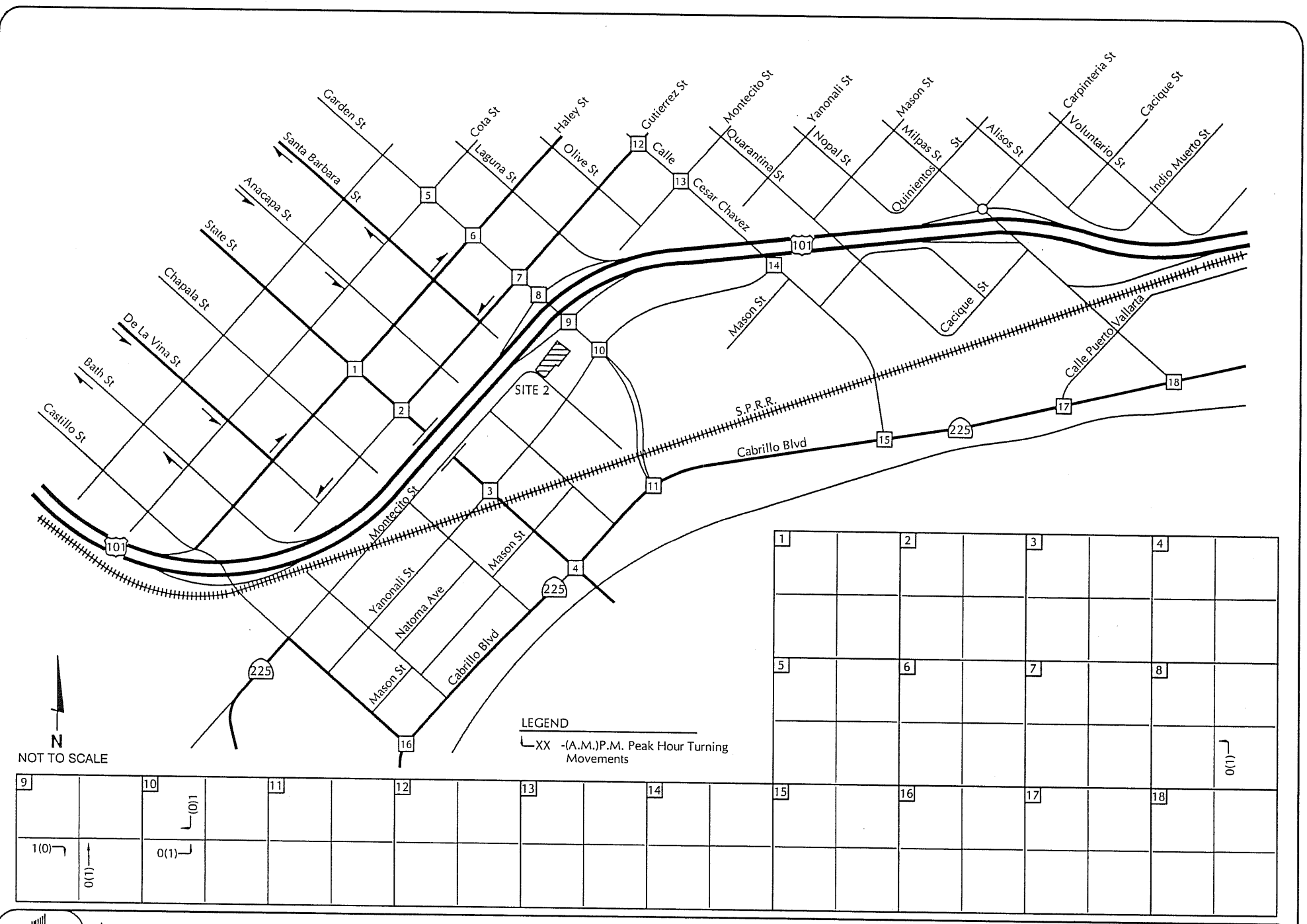


ASSOCIATED TRANSPORTATION ENGINEERS

SITE 2 EXISTING TRIP DISTRIBUTION - RESIDENTIAL

FIGURE 2.1

JSL #04013



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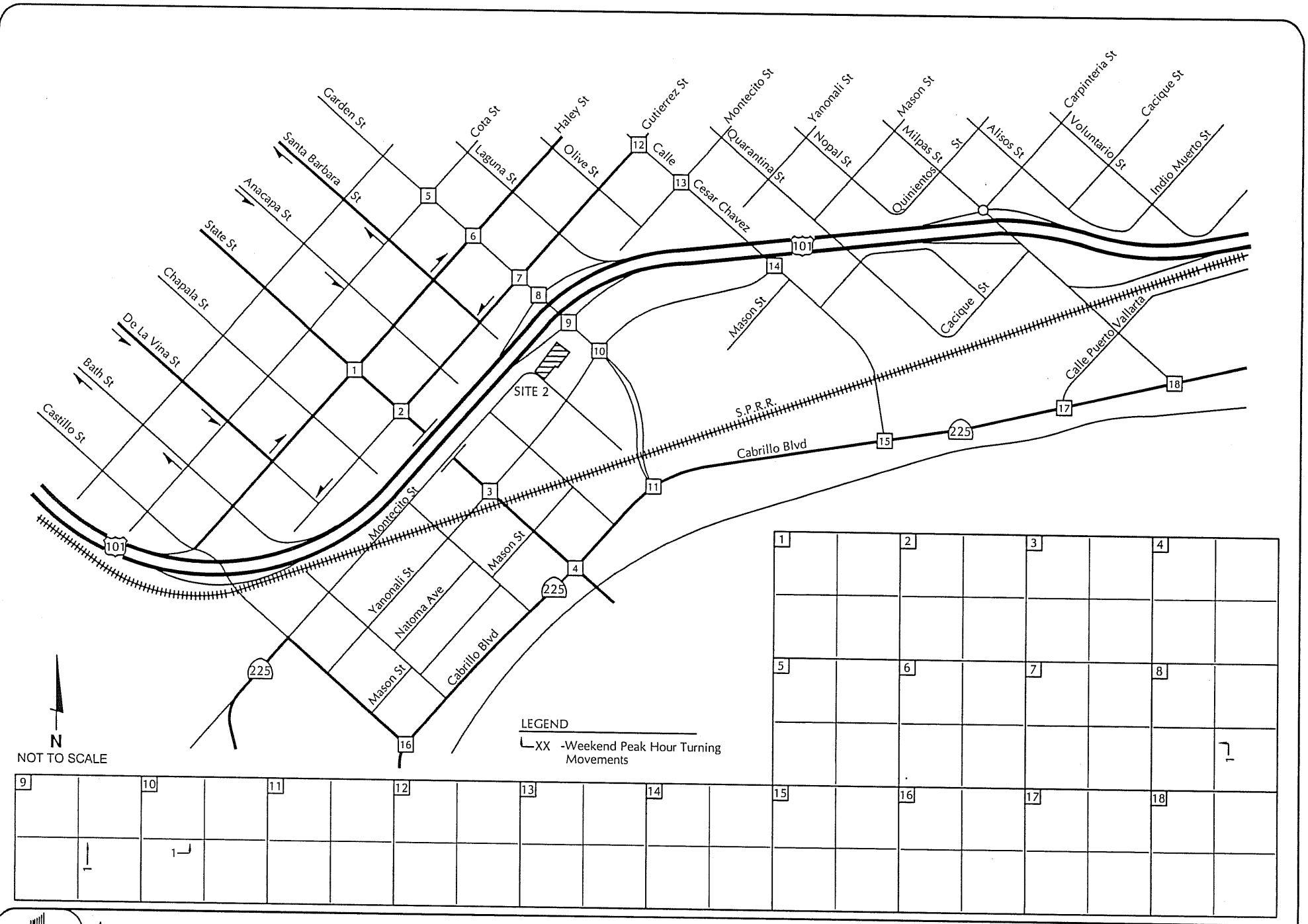
SITE 2 EXISTING WEEKDAY PEAK HOUR TRIP ASSIGNMENTS - RESIDENTIAL

FIGURE 2.1-1

JSL #04013

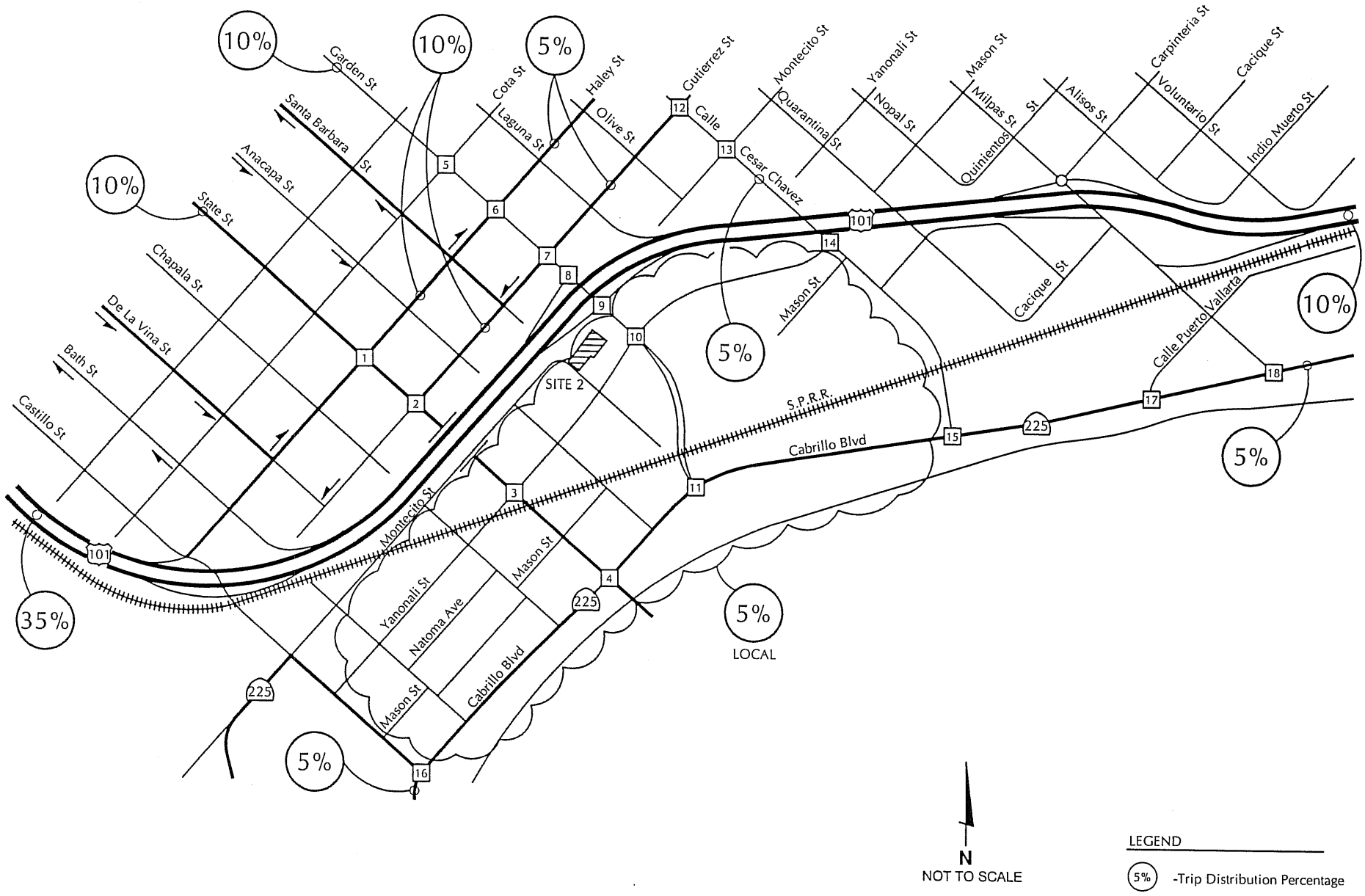


ASSOCIATED TRANSPORTATION ENGINEERS

SITE 2 EXISTING WEEKEND PEAK HOUR TRIP ASSIGNMENTS - RESIDENTIAL

FIGURE 2.1-2

JSL #04013

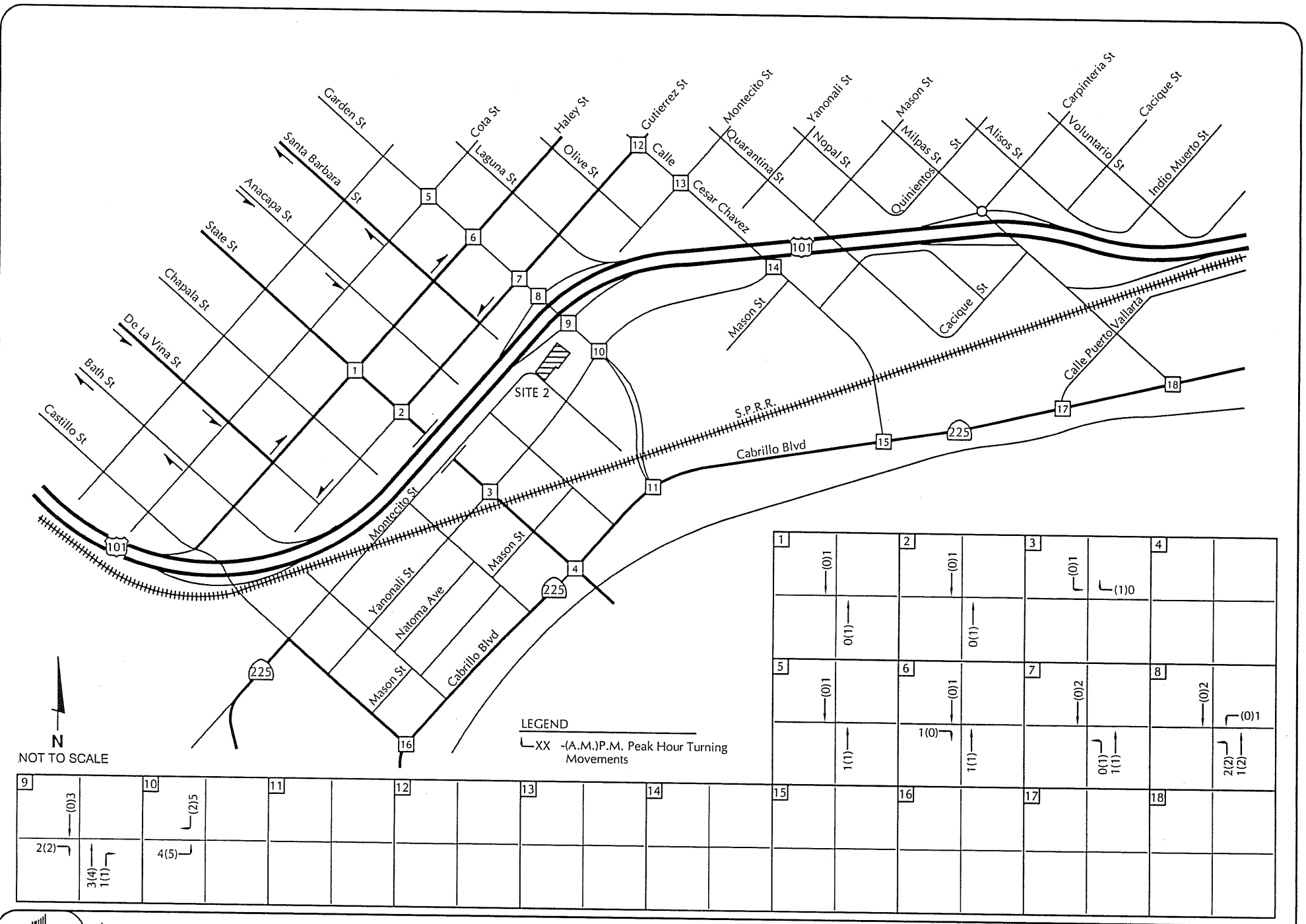


ASSOCIATED TRANSPORTATION ENGINEERS

SITE 2 PROJECT TRIP DISTRIBUTION - RESIDENTIAL

FIGURE 2.2

JSL #04013

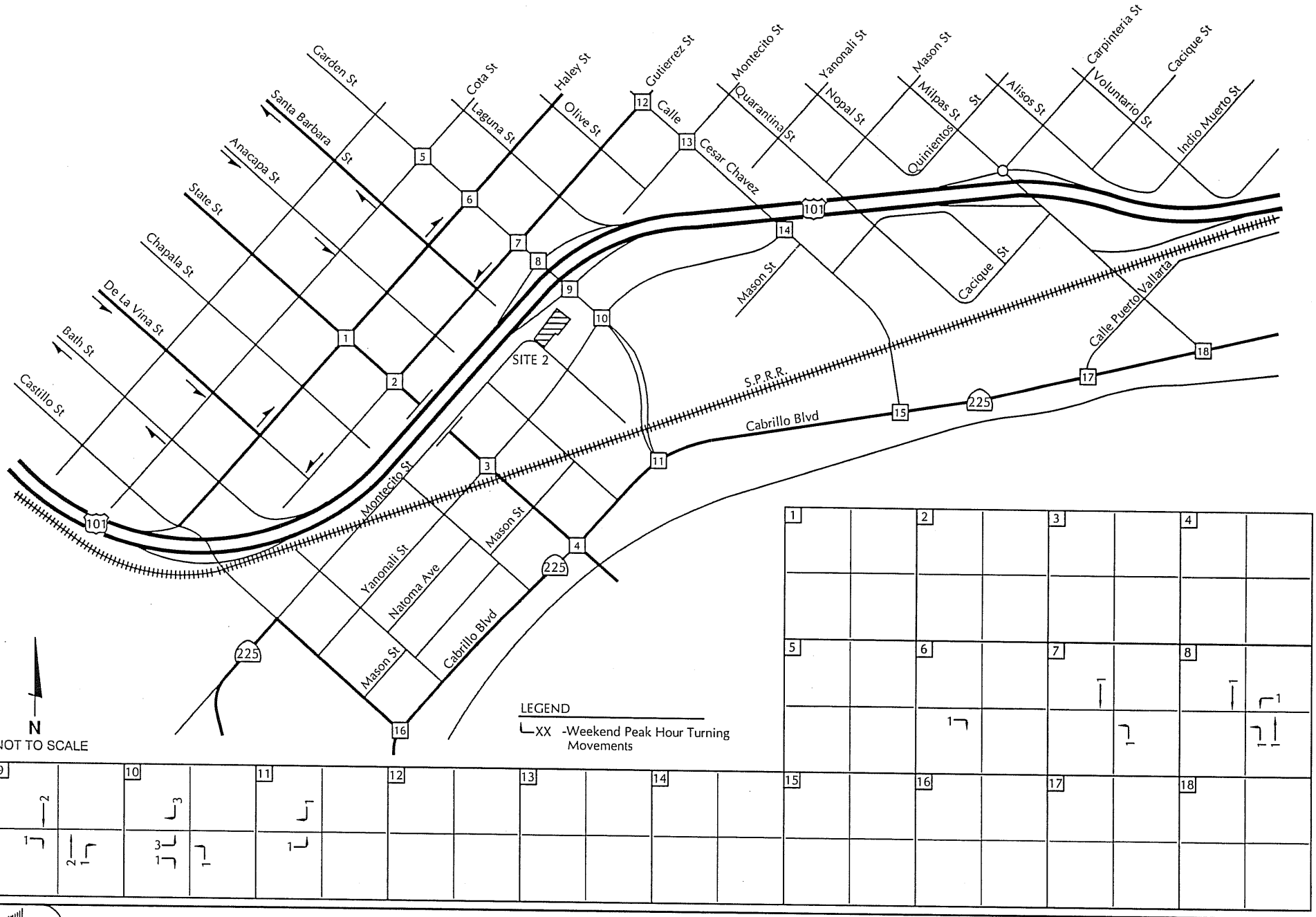


ASSOCIATED TRANSPORTATION ENGINEERS

SITE 2 WEEKDAY PEAK HOUR PROJECT TRIP ASSIGNMENTS - RESIDENTIAL

FIGURE 2.2-1

JSL #04013

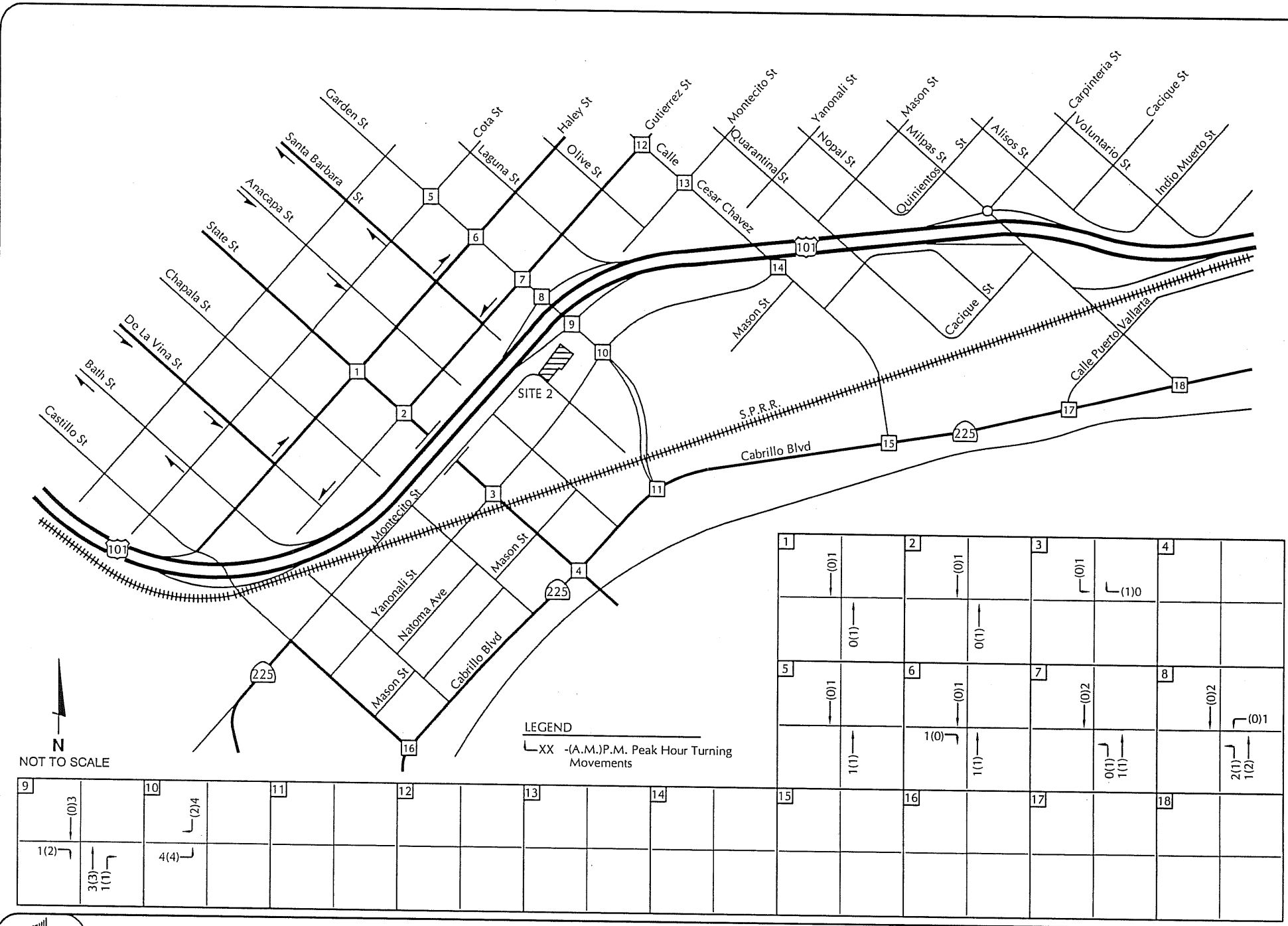


ASSOCIATED TRANSPORTATION ENGINEERS

SITE 2 WEEKEND PEAK HOUR PROJECT TRIP ASSIGNMENTS - RESIDENTIAL

FIGURE 2.2-2

JSL #04013

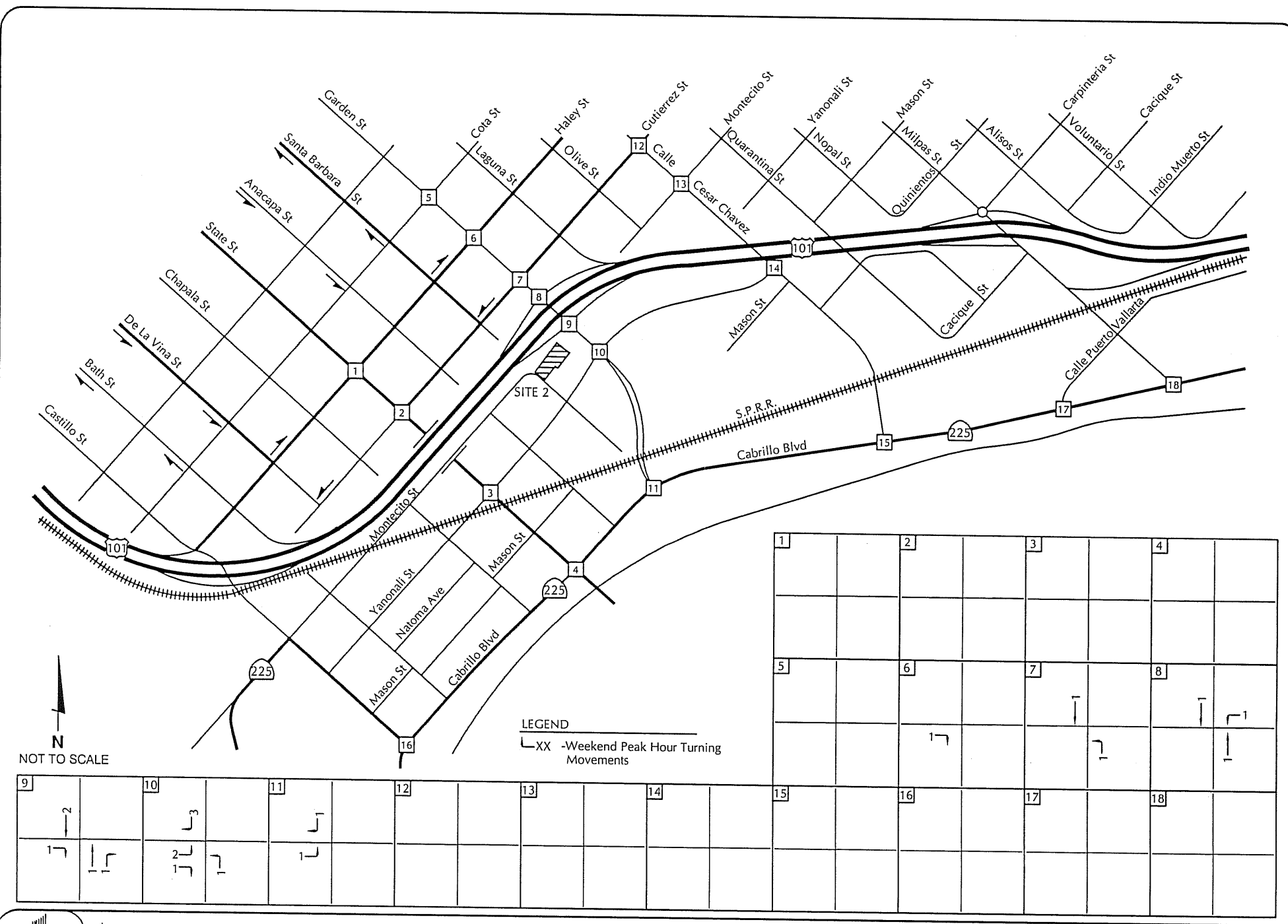


ASSOCIATED TRANSPORTATION ENGINEERS

SITE 2 WEEKDAY PEAK HOUR NET PROJECT TRIP ASSIGNMENTS

FIGURE 2.3

JSL #04013

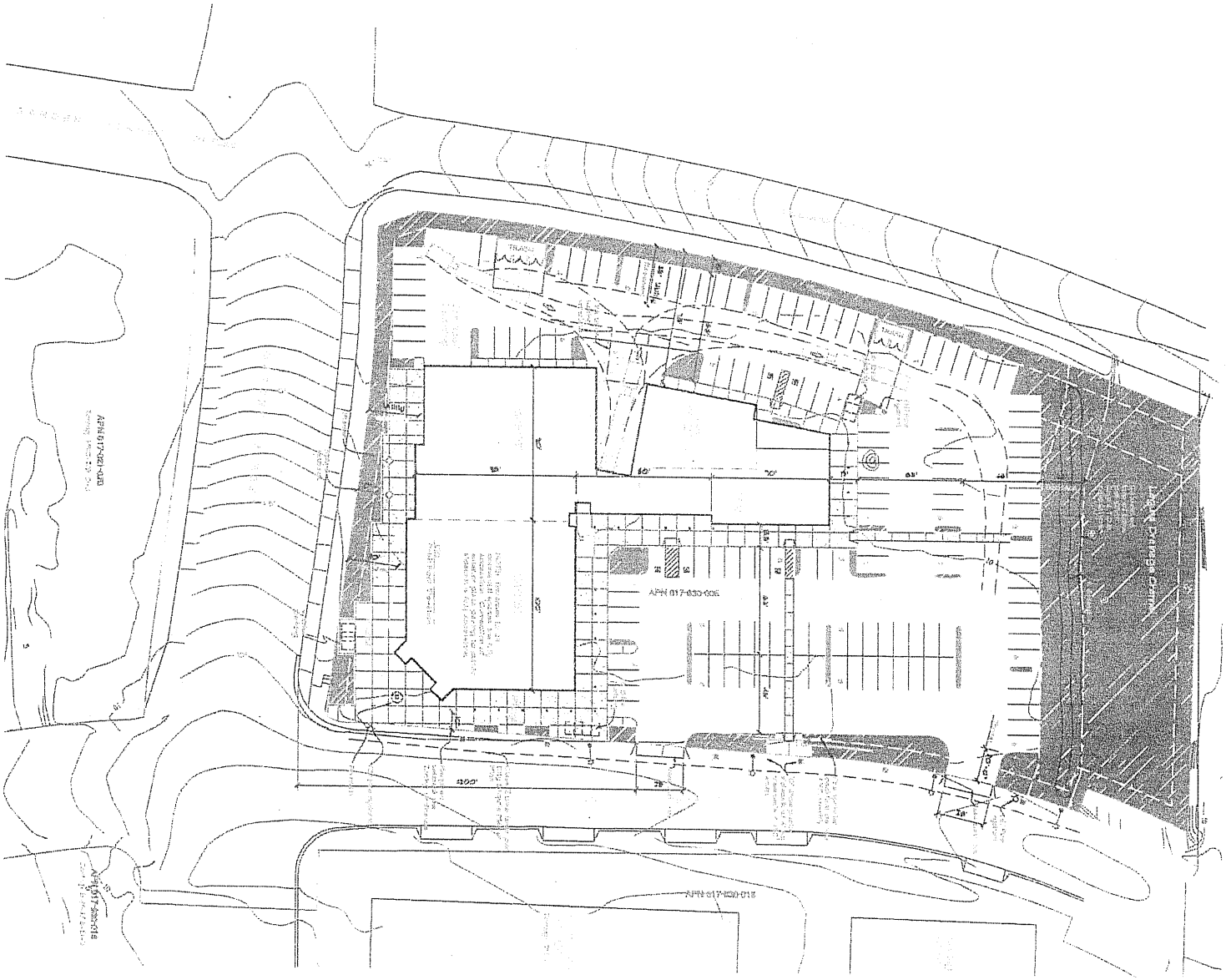


ASSOCIATED TRANSPORTATION ENGINEERS

SITE 2 WEEKEND PEAK HOUR NET PROJECT TRIP ASSIGNMENTS

FIGURE 2.4

JSL #04013



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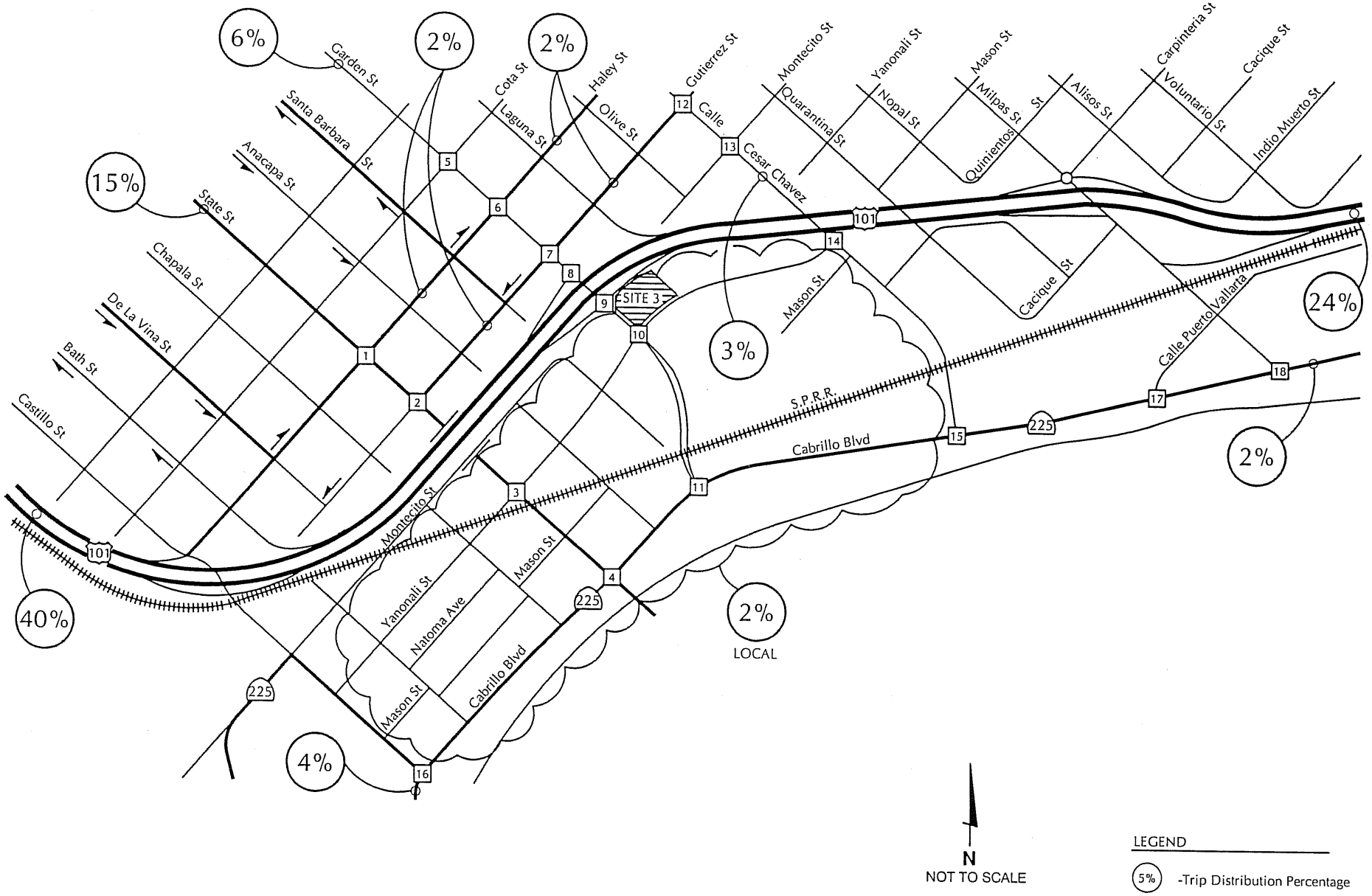
ENGINEERS

PROJECT SITE PLAN - SITE 3

FIGURE 3

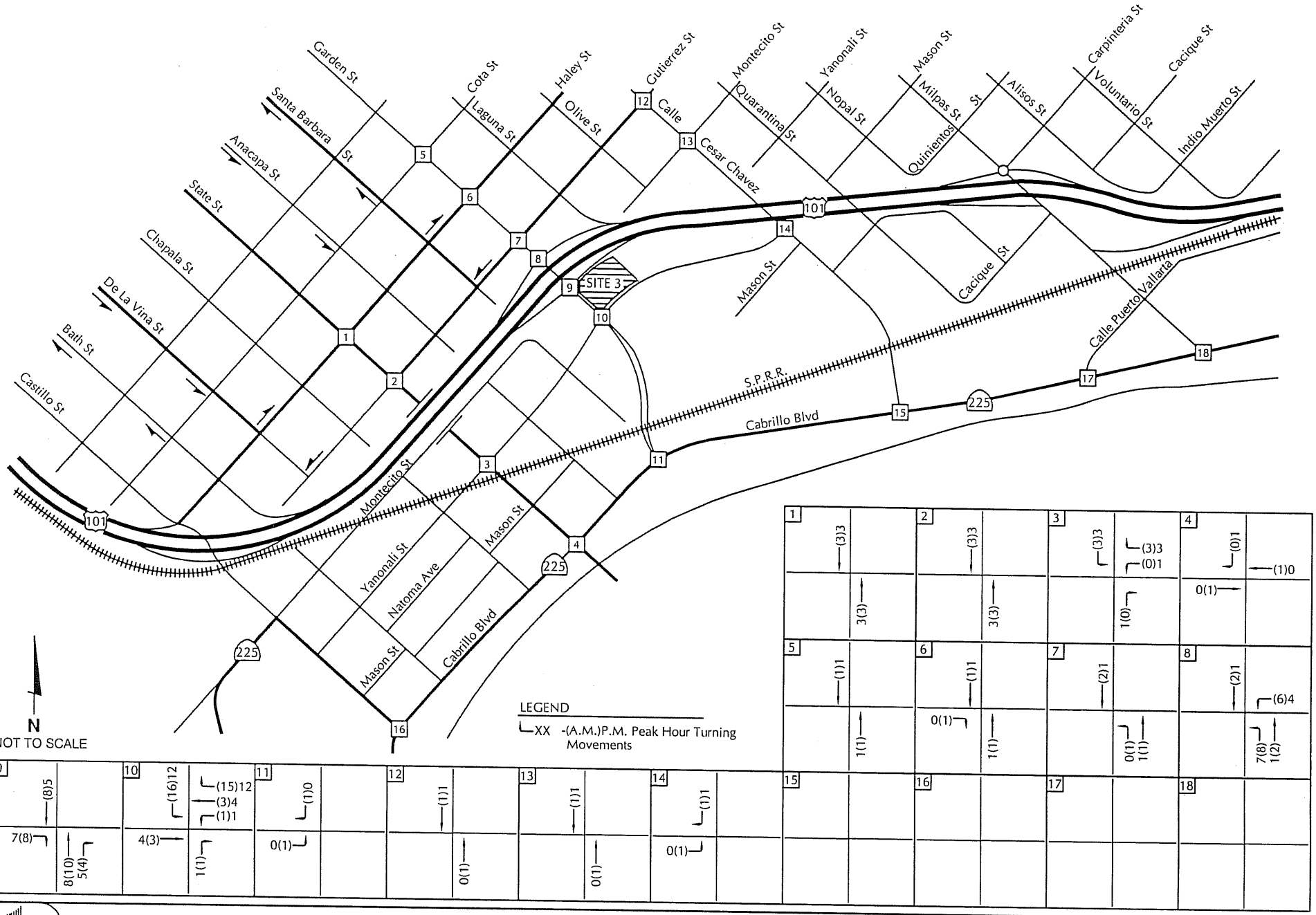


ASSOCIATED TRANSPORTATION ENGINEERS

SITE 3 EXISTING TRIP DISTRIBUTION - INDUSTRIAL

FIGURE 3.1

JSL #04013



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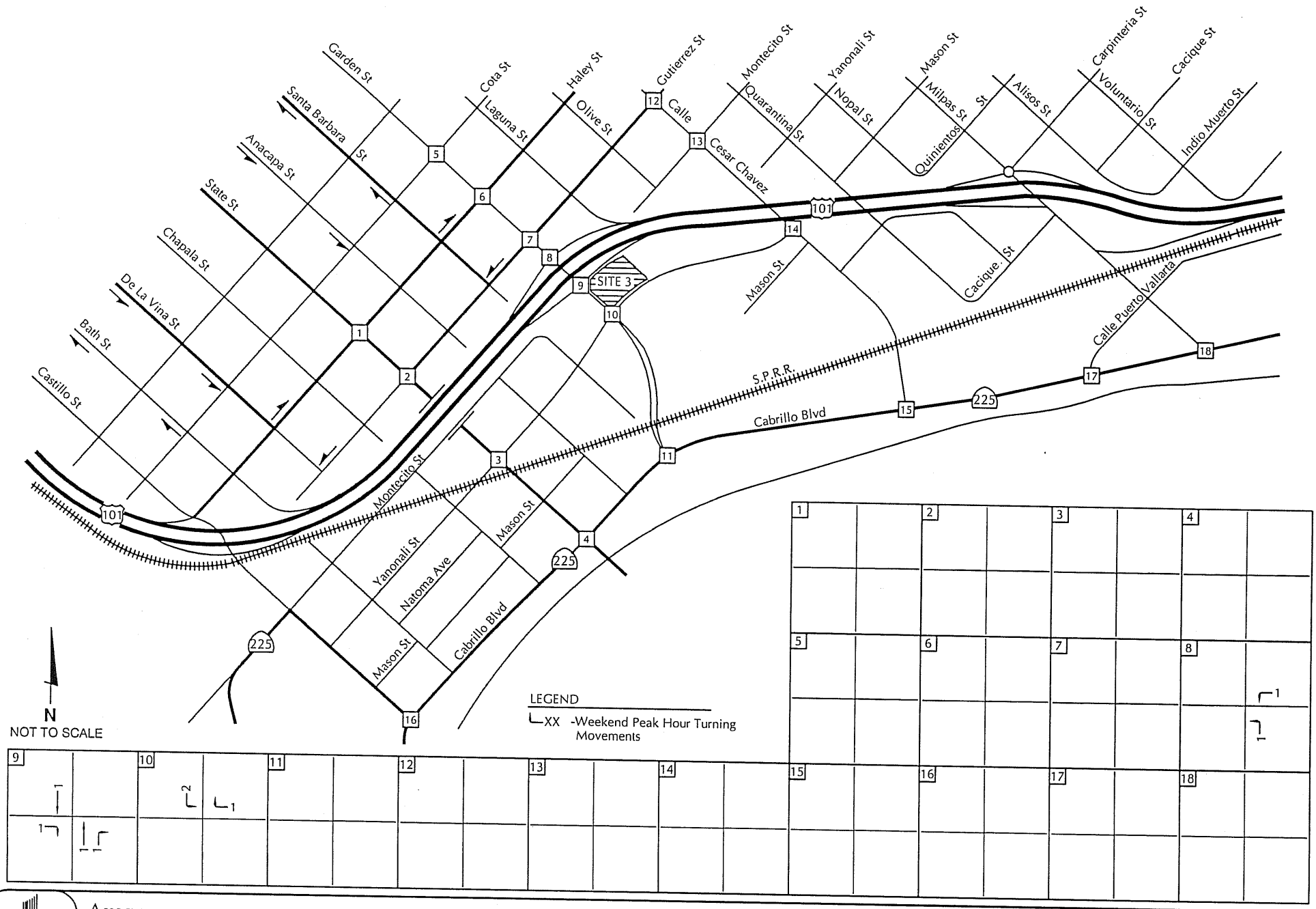
SITE 3 EXISTING WEEKDAY PEAK HOUR TRIP ASSIGNMENTS - INDUSTRIAL

FIGURE 3.1-1

JSL #04013



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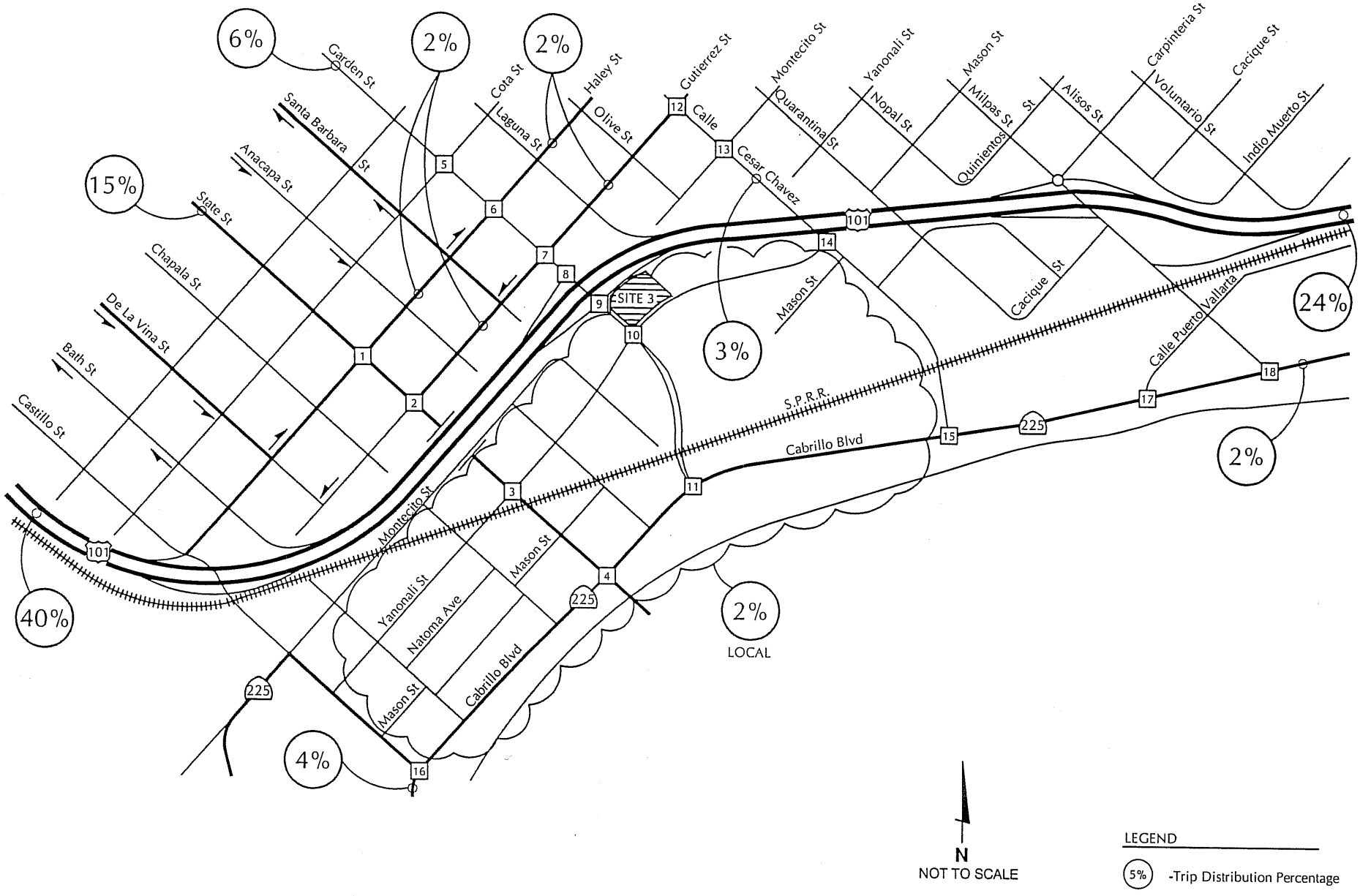
SITE 3 EXISTING WEEKEND PEAK HOUR TRIP ASSIGNMENTS - INDUSTRIAL

FIGURE 3.1-2

JSL #04013

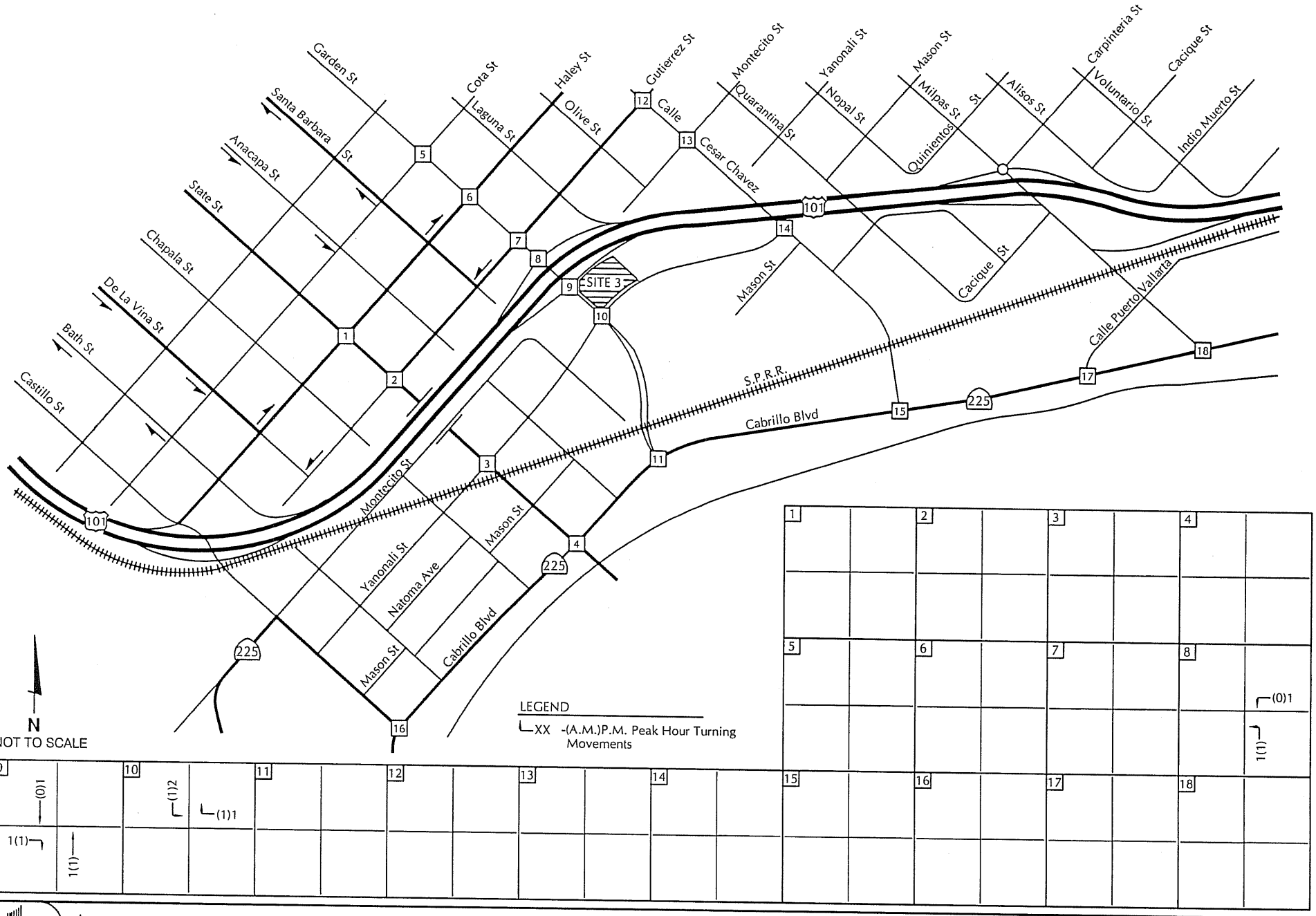


ASSOCIATED TRANSPORTATION ENGINEERS

SITE 3 PROJECT TRIP DISTRIBUTION - MINI-STORAGE

FIGURE 3.2

JSL #04013

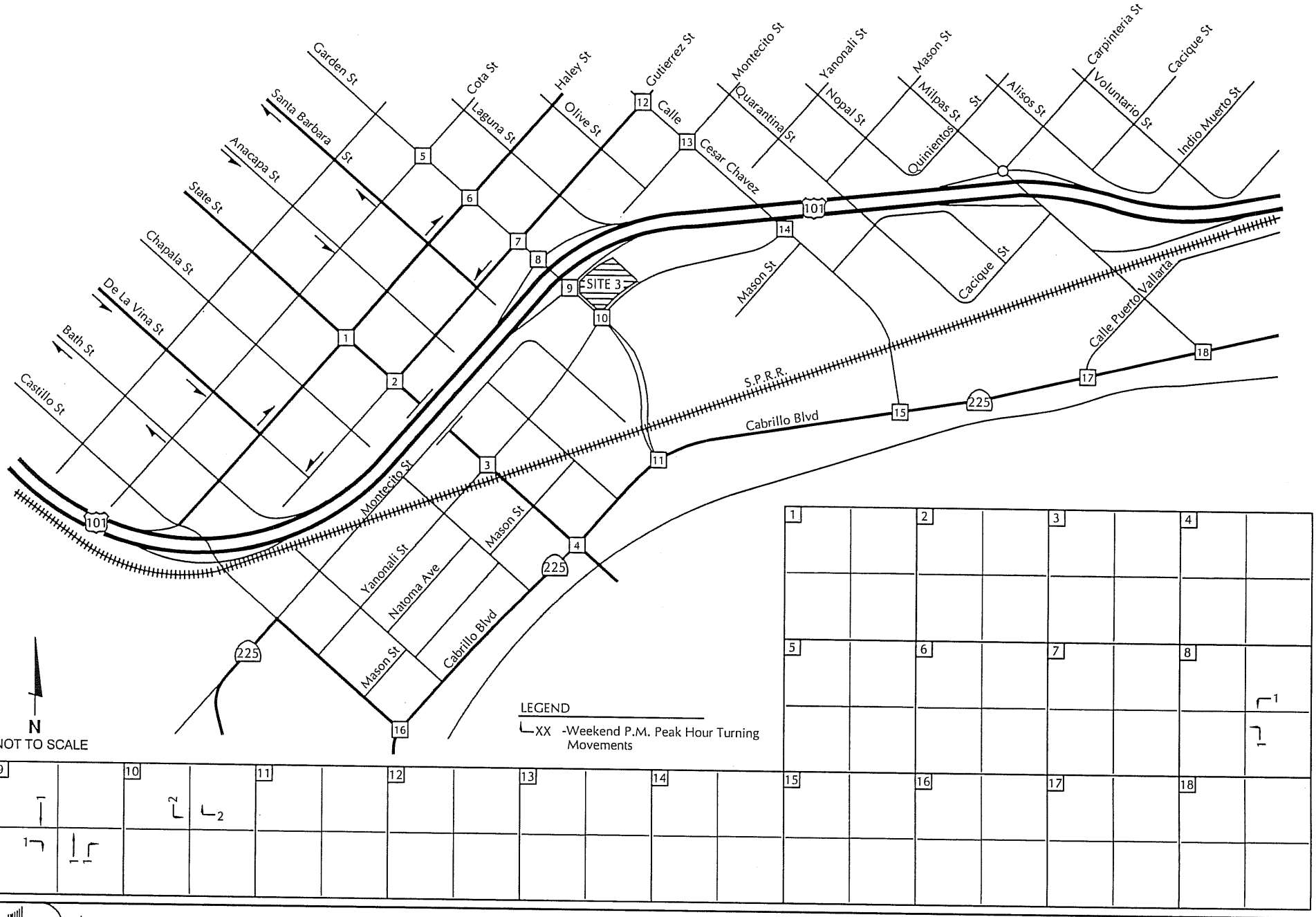


ASSOCIATED TRANSPORTATION ENGINEERS

SITE 3 WEEKDAY PEAK HOUR PROJECT TRIP ASSIGNMENTS - MINI-STORAGE

FIGURE 3.2-1

JSL #04013

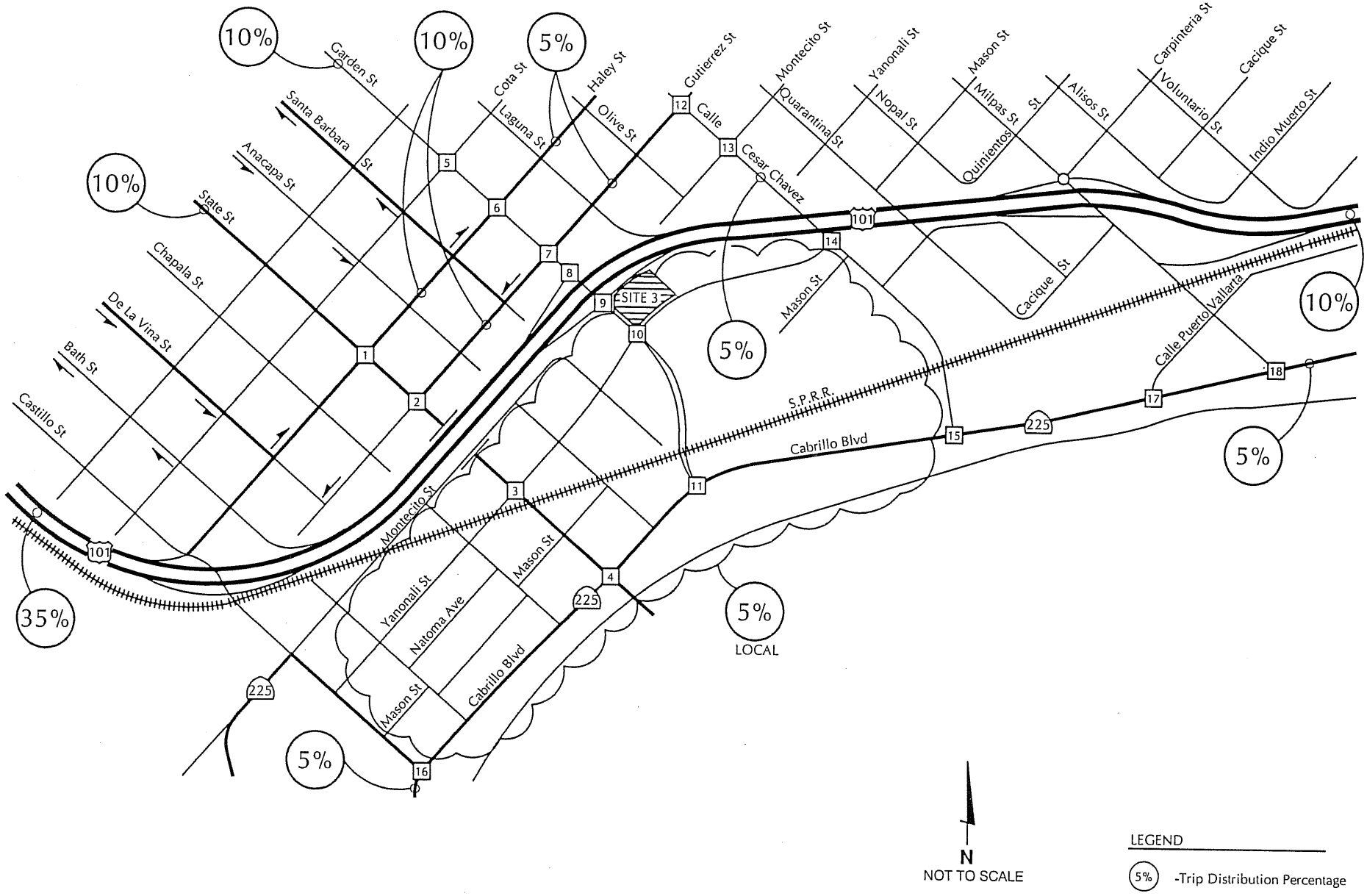


ASSOCIATED TRANSPORTATION ENGINEERS

SITE 3 WEEKEND PEAK HOUR PROJECT TRIP ASSIGNMENTS - MINI-STORAGE

FIGURE 3.2-2

JSL #04013



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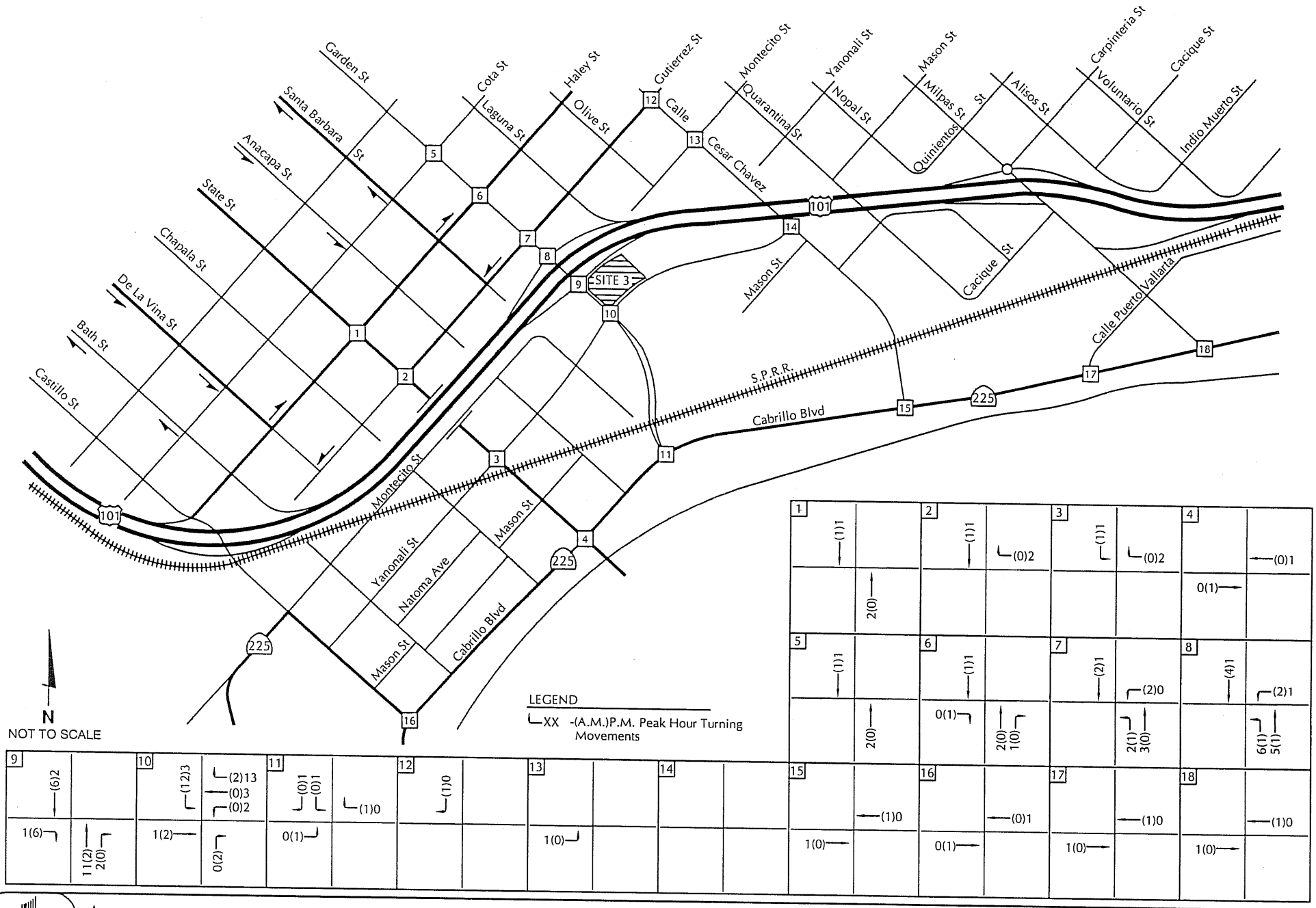
SITE 3 PROJECT TRIP DISTRIBUTION - OFFICE

FIGURE 3.3

JSL #04013

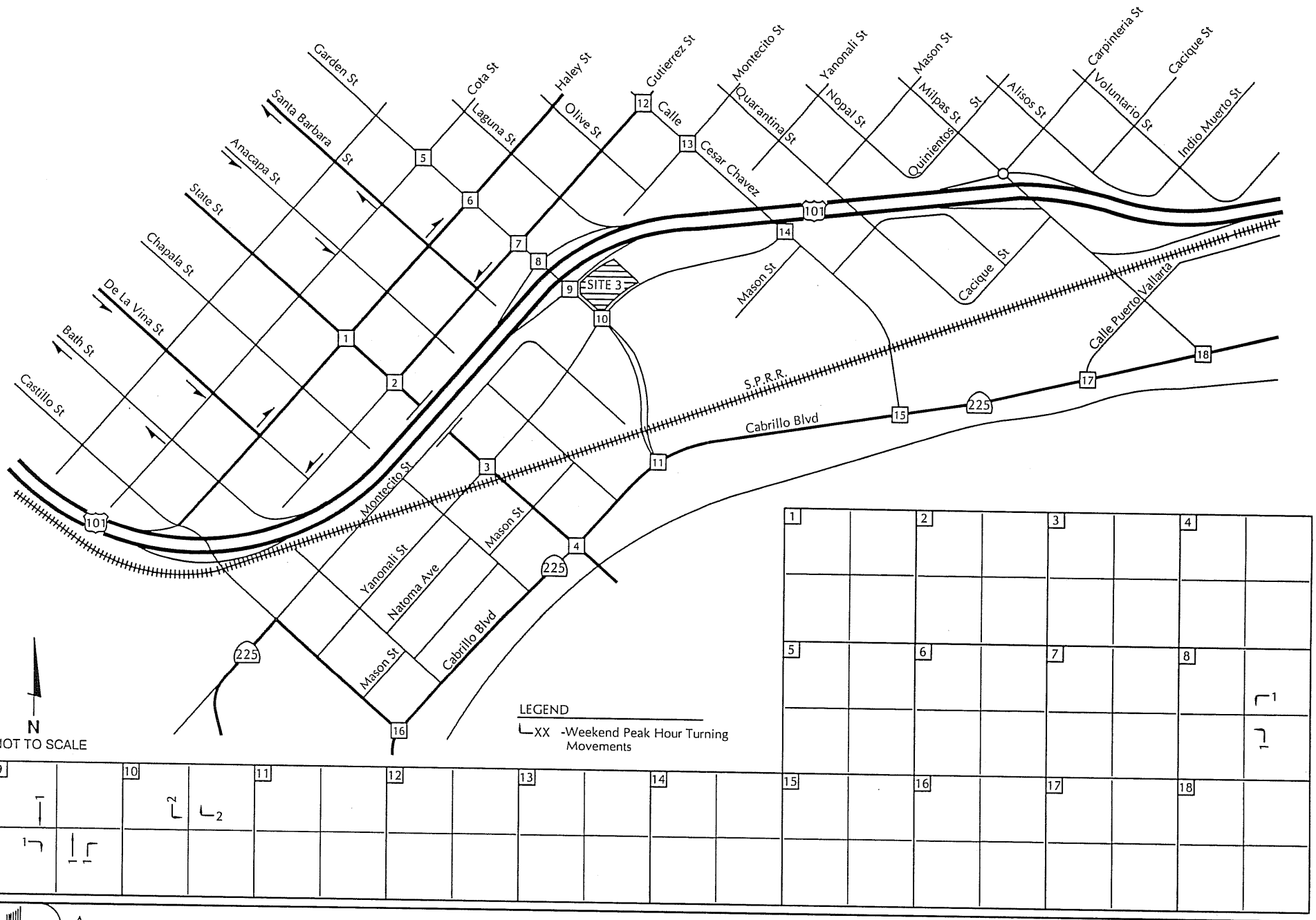


ASSOCIATED TRANSPORTATION ENGINEERS

SITE 3 WEEKDAY PEAK HOUR PROJECT TRIP ASSIGNMENTS - OFFICE

FIGURE 3.3-1

JSL #04013



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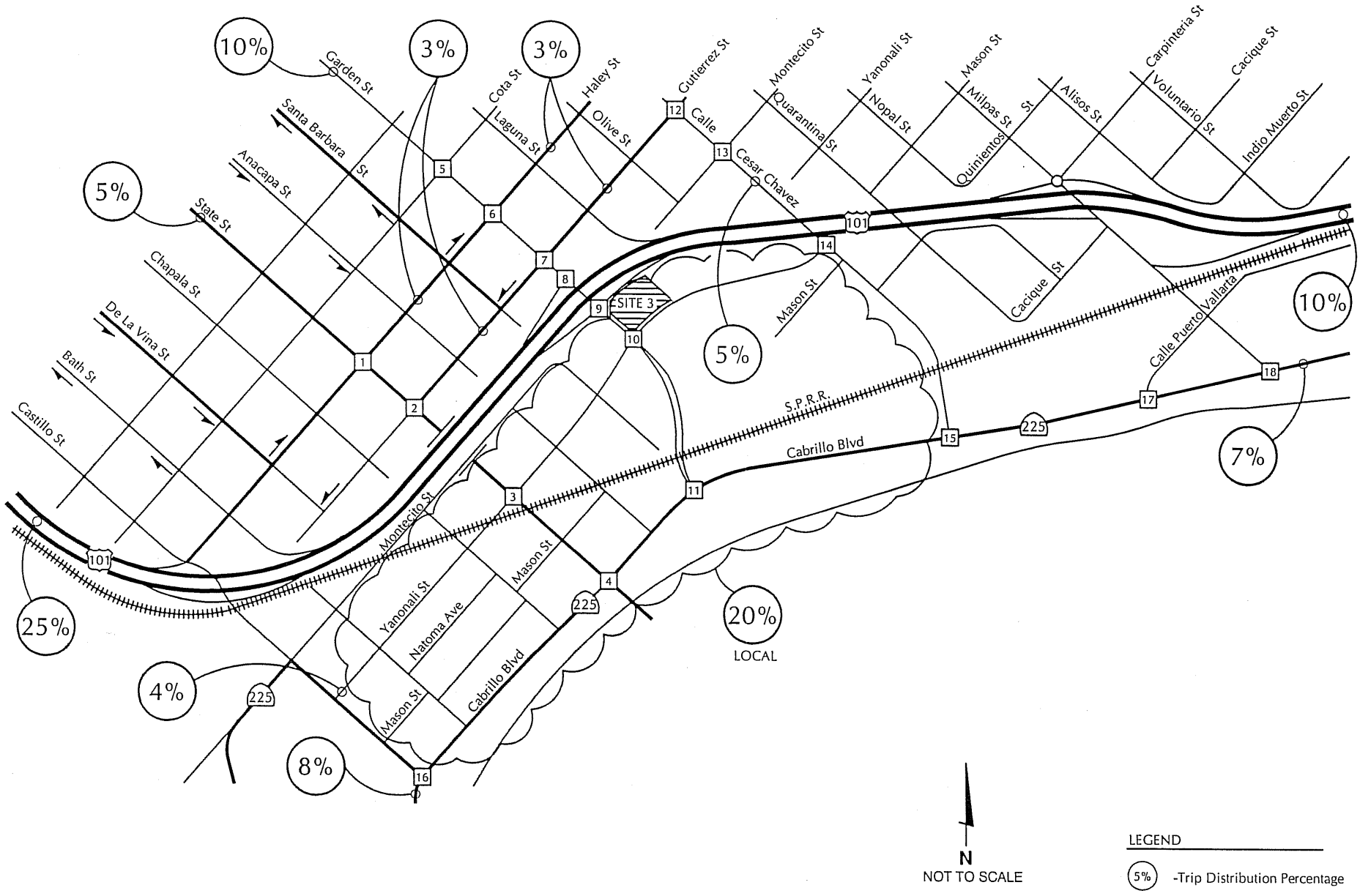
SITE 3 WEEKEND PEAK HOUR PROJECT TRIP ASSIGNMENTS - OFFICE

FIGURE 3.3-2

JSL #04013



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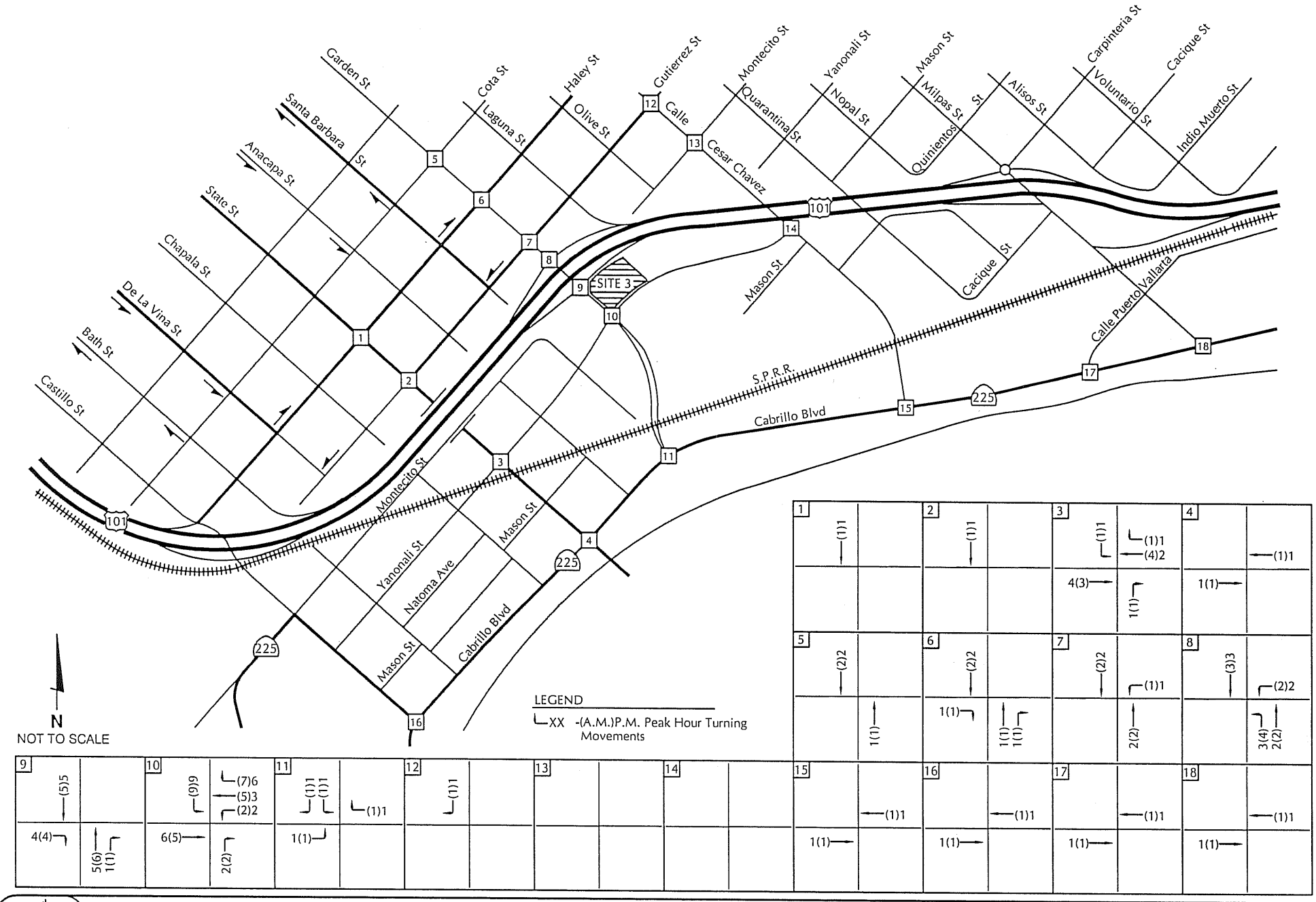
SITE 3 PROJECT TRIP DISTRIBUTION - RESTAURANT

FIGURE 3.4

JSL #04013

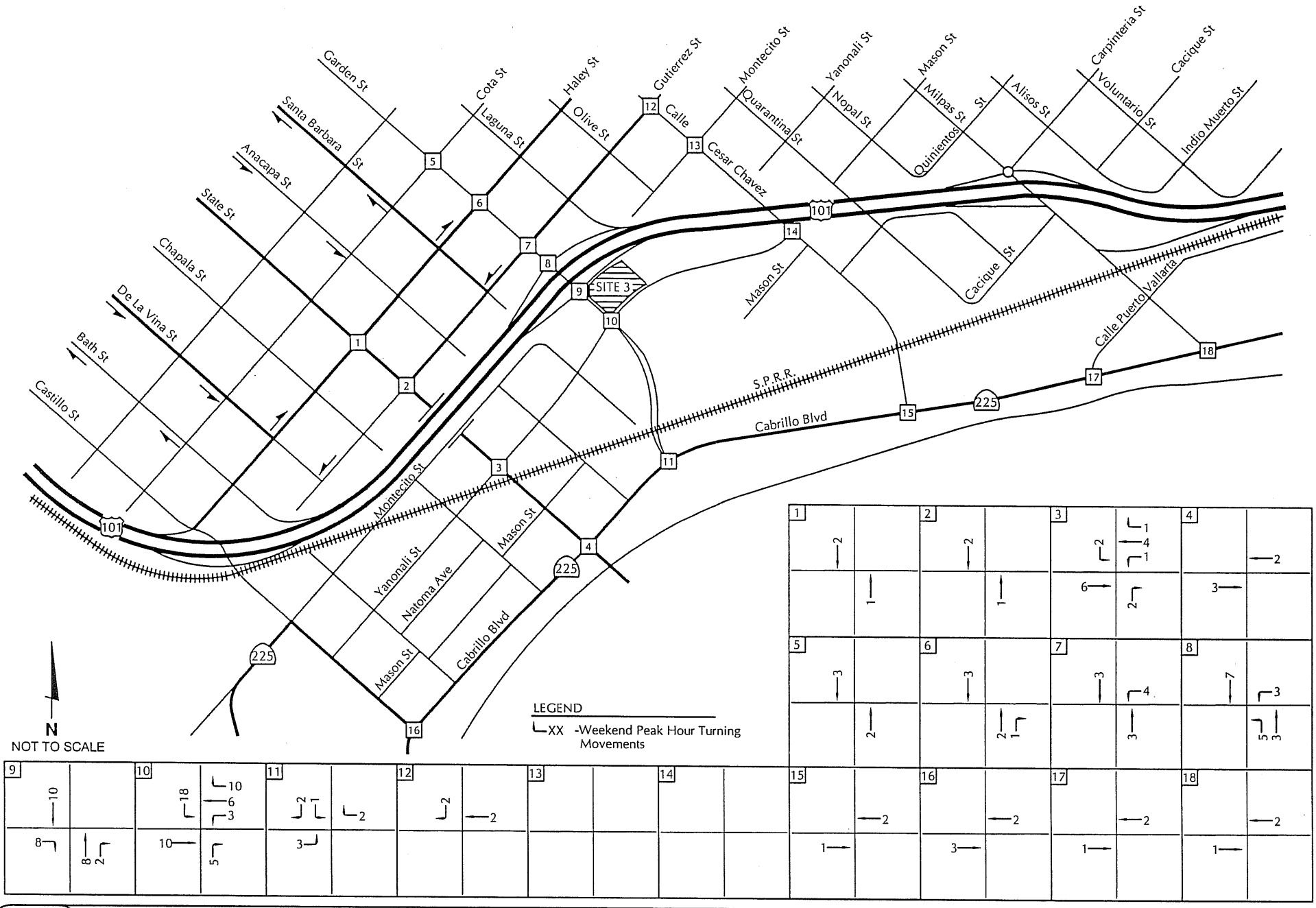


ASSOCIATED TRANSPORTATION ENGINEERS

SITE 3 WEEKDAY PEAK HOUR PROJECT TRIP ASSIGNMENTS - RESTAURANT

FIGURE 3.4-1

JSL #04013

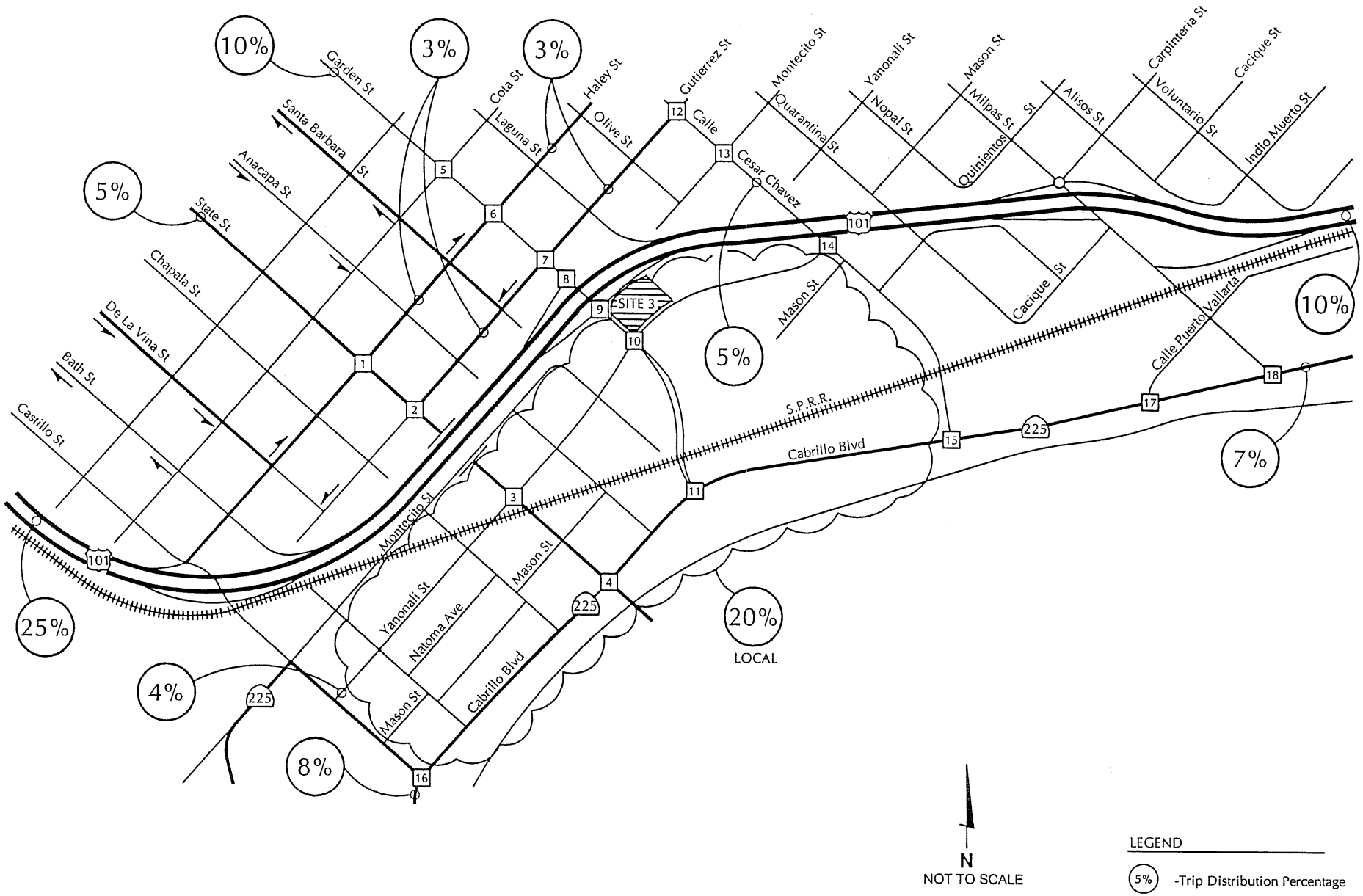


ASSOCIATED TRANSPORTATION ENGINEERS

SITE 3 WEEKEND PEAK HOUR PROJECT TRIP ASSIGNMENTS - RESTAURANT

FIGURE 3.4-2

JSL #04013



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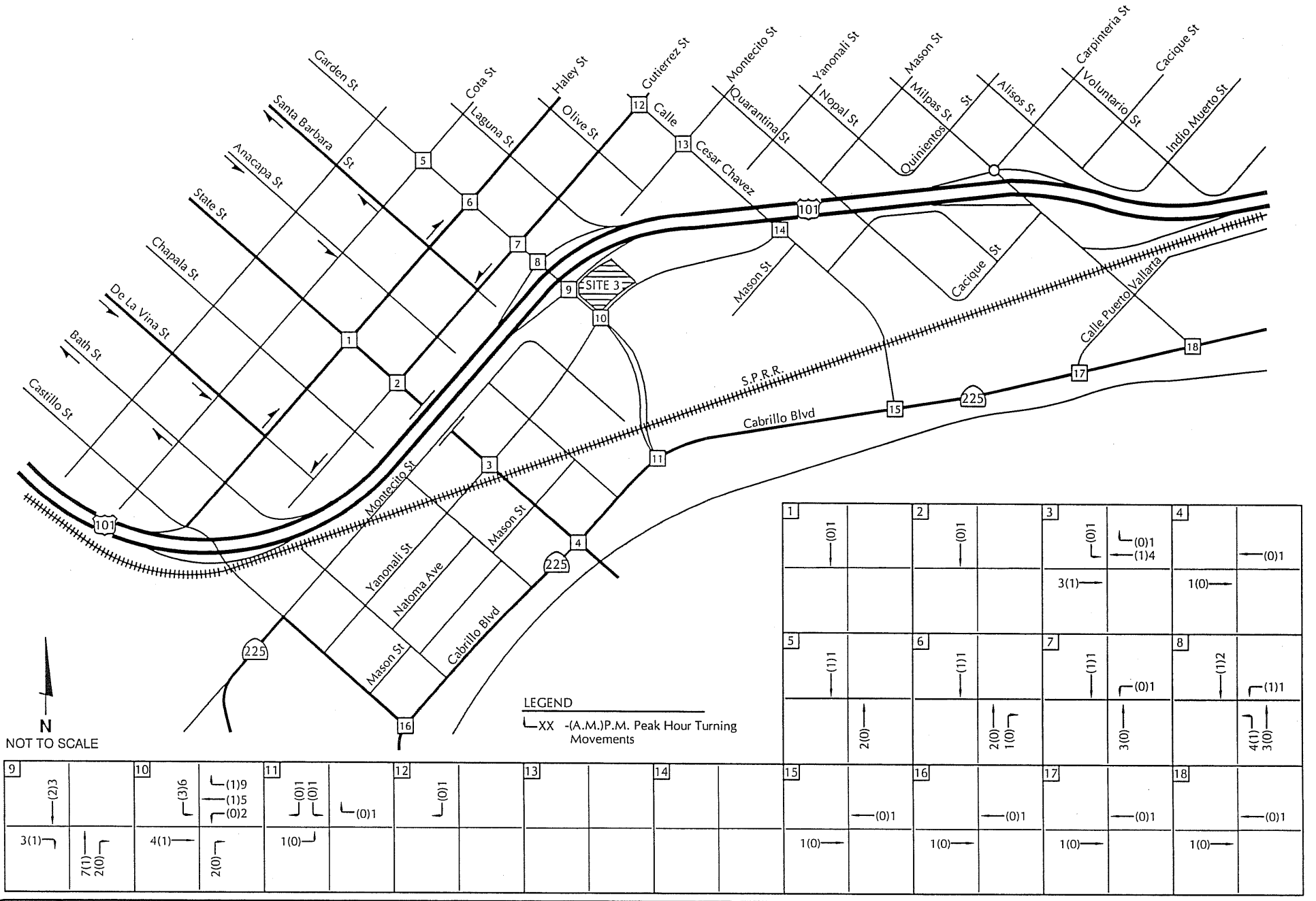
SITE 3 PROJECT TRIP DISTRIBUTION - RETAIL

FIGURE 3.5

JSL #04013



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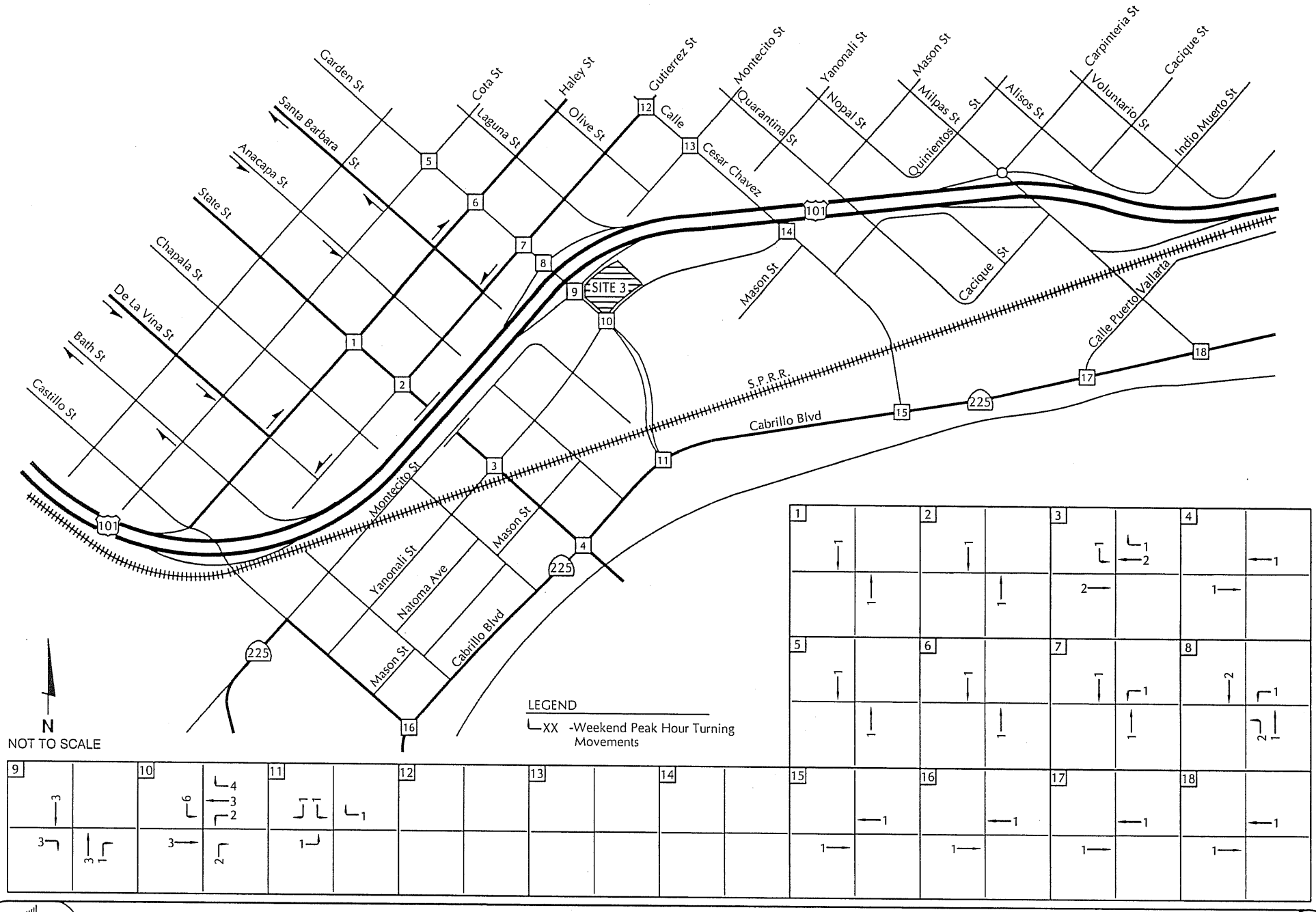
SITE 3 WEEKDAY PEAK HOUR PROJECT TRIP ASSIGNMENTS - RETAIL

FIGURE 3.5-1

JSL #04013



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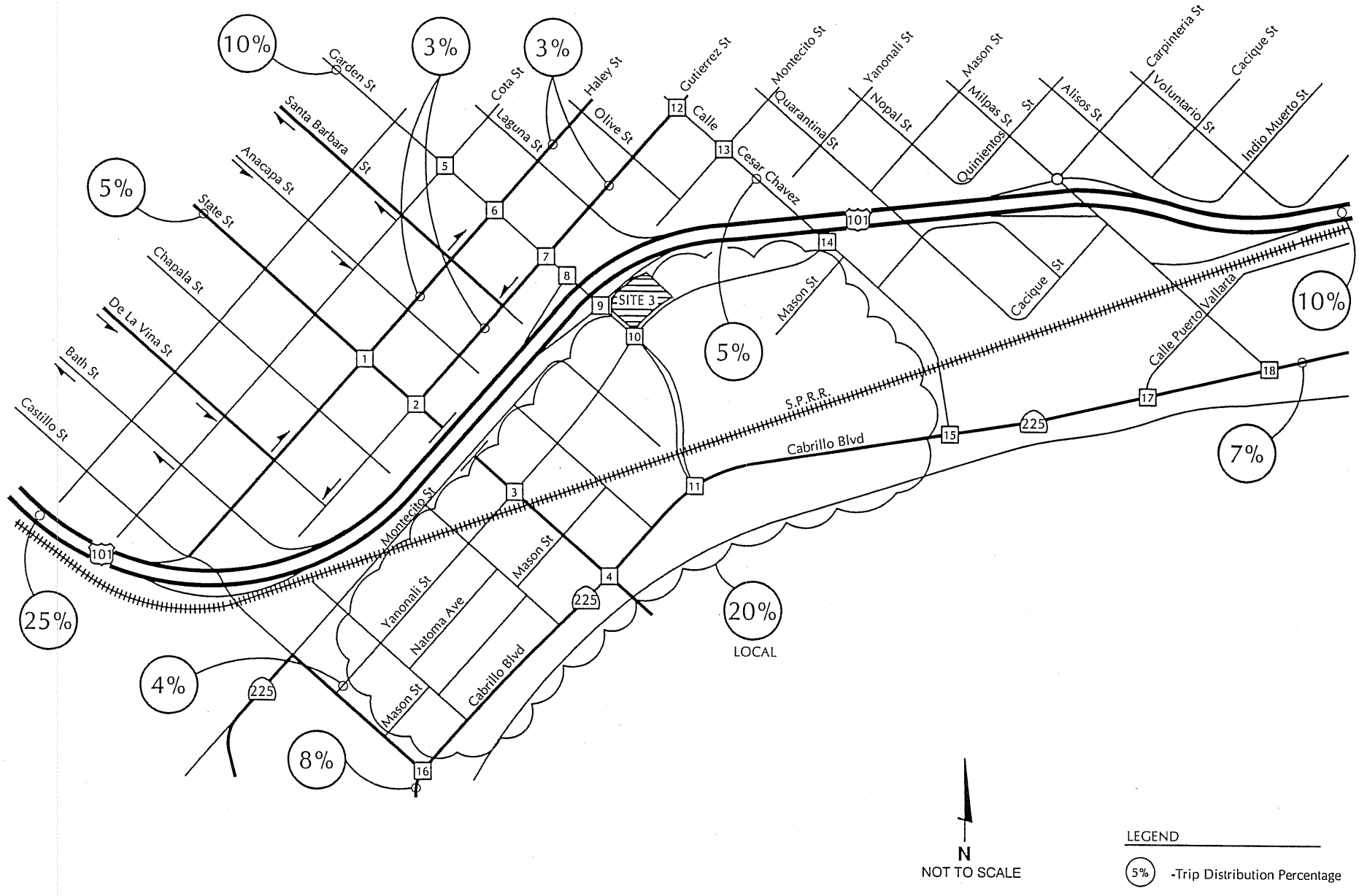
SITE 3 WEEKEND PEAK HOUR PROJECT TRIP ASSIGNMENTS - RETAIL

FIGURE 3.5-2

JSL #04013



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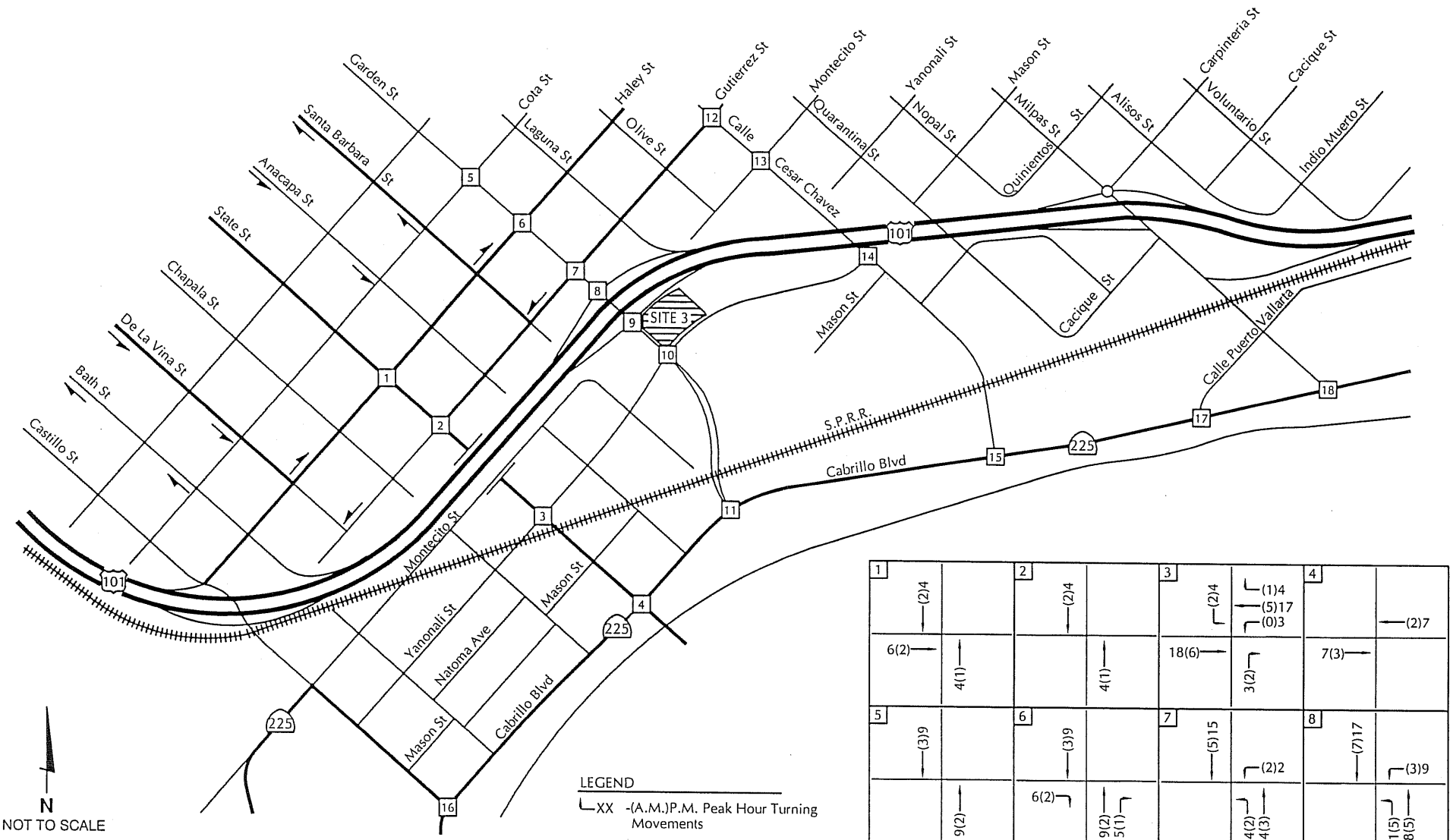
SITE 3 PROJECT TRIP DISTRIBUTION - MARKET

FIGURE 3.6

JSL #04013



1		2		3		4	
(2)4 ↓		(2)4 ↓		(2)4 ↓	(1)4 ← (5)17 (0)3		(2)7 ←
6(2) →	4(1) ↑		4(1) ↑	18(6) →	3(2) ↓	7(3) →	
5		**6**		**7**		**8**	
(3)9 ↓		(3)9 ↓		(5)15 ↓	(2)2 ↓	(7)17 ↓	(3)9 ↓
	9(2) ↑	6(2) ↓	9(2) ← 5(1) ↓		4(2) → 14(3) ↑		21(5) ↓ 18(5) ↑
9		**10**		**11**		**12**	
(10)26 ↓		(18)48 ↓	(12)47 ← (6)24 (3)13 ↓	(2)7 ← (1)6 ↓	(2)6 ↓	(2)4 ↓	
22(8) →	39(10) ↑ 8(2) ↓	25(10) →	13(5) ↓	7(3) →			
13		**14**		**15**		**16**	
(0)2 ↓		(0)2 ↓			(2)6 ←		(2)7 ←
		1(0) →		6(1) →		7(3) →	
17		**18**					
	(2)6 ←		(2)6 ←				
6(1) →		6(1) →					

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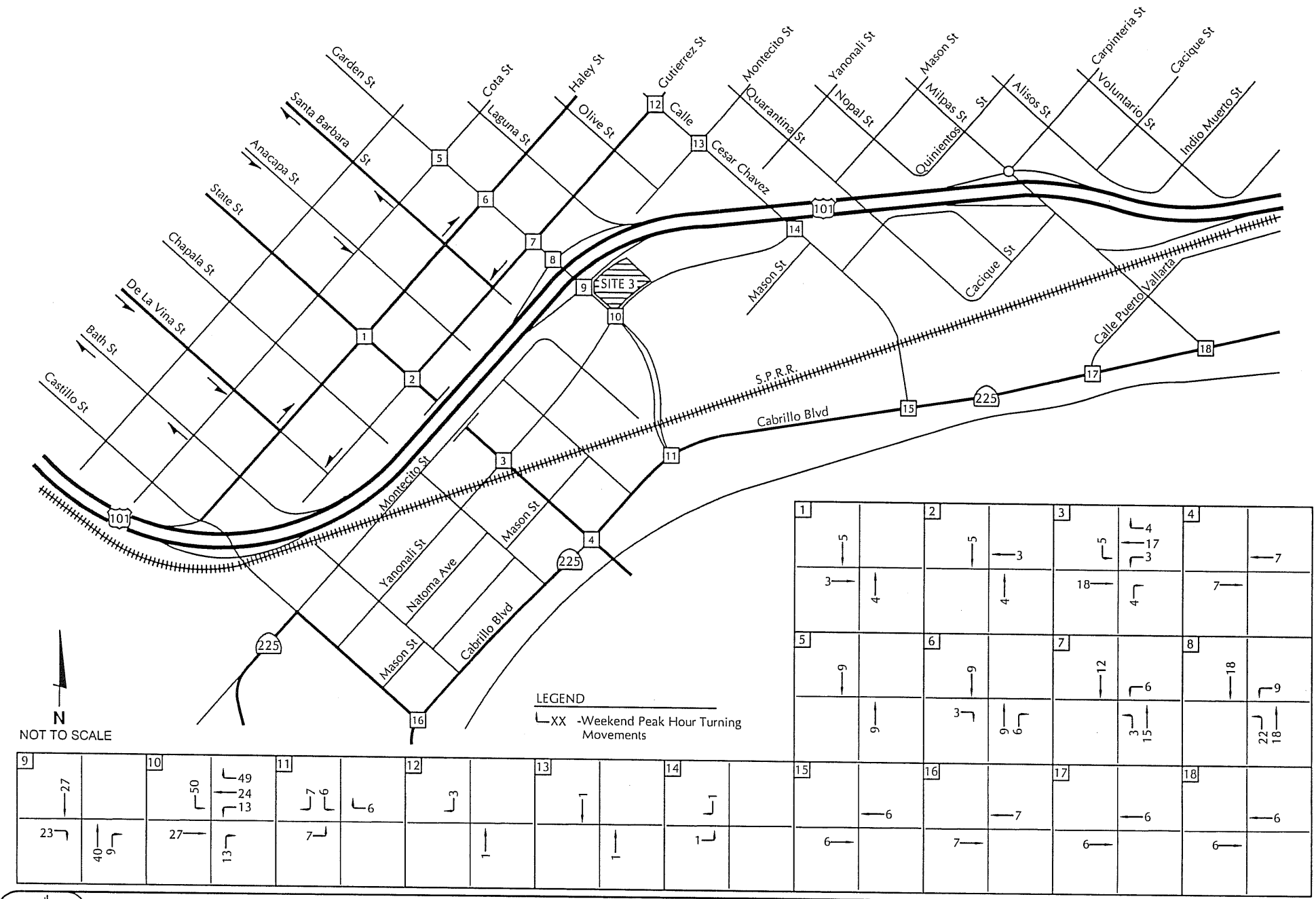
SITE 3 WEEKDAY PEAK HOUR PROJECT TRIP ASSIGNMENTS - MARKET

FIGURE 3.6-1

JSL #04013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Anacapa St
State St
Chapala St
De La Vina St
Bath St
Castillo St
Cota St
Laguna St
Haley St
Olive St
Gutierrez St
Calle Cesar Chavez
Montecito St
Quarantina St
Yanonali St
Nopal St
Mason St
Milpas St
Quinientos St
Alisos St
Carpinteria St
Voluntario St
Cacique St
Indio Muerto St
SITE 3
Mason St
Cacique St
Calle Puerto Vallarta
S.P.R.R.
Cabrillo Blvd
Montecito St
Yanonali St
Natoma Ave
Mason St
Cabrillo Blvd
Mason St
101
225
1
2
3
4
5
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16
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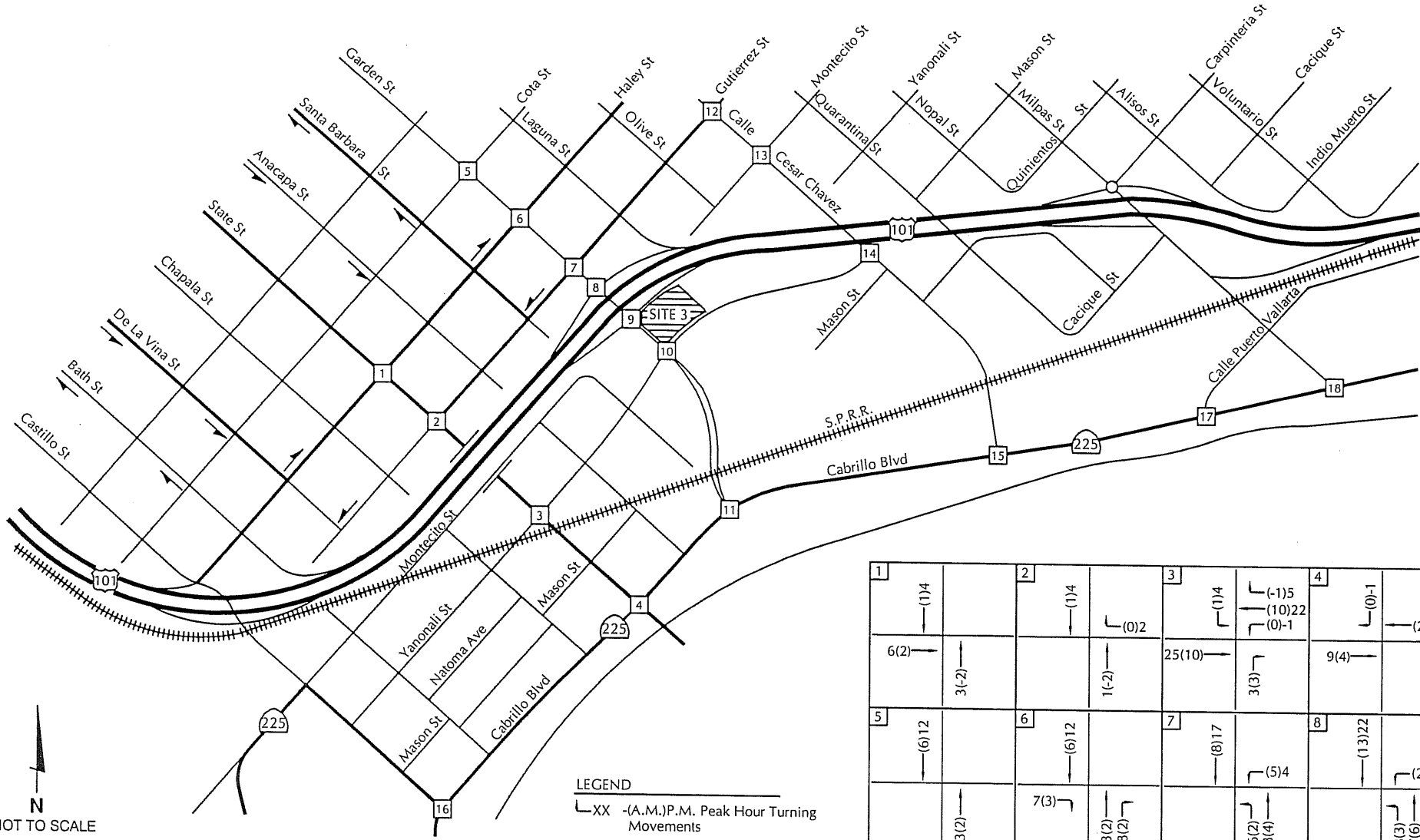
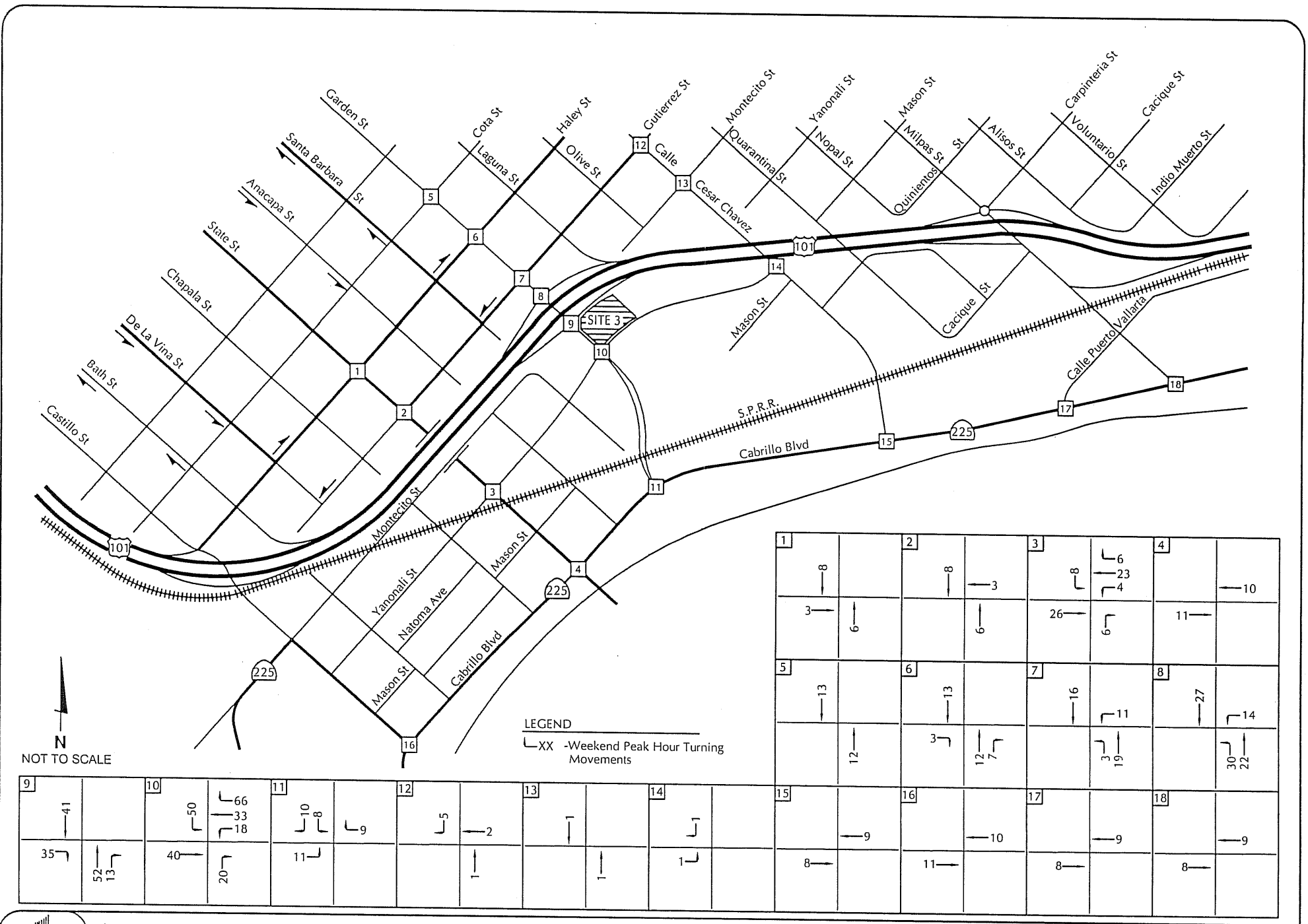
18
N
NOT TO SCALE
LEGEND
XX -Weekend Peak Hour Turning Movements



1	(1)4		2	(1)4	(0)2	3	(1)4	(-1)5 (10)22 (0)-1	4	(0)-1	(2)10						
	6(2)	3(-2)			1(-2)		25(10)	3(3)		9(4)							
5	(6)12		6	(6)12		7	(8)17	(5)4	8	(13)22	(2)10						
		13(2)		7(3)	13(2) 8(2)			6(2) 18(4)			28(3) 27(6)						
9	(15)32		10	(27)56	(8)64 (9)31 (4)18	11	(2)10 (2)4	(4)8	12	(4)6 (-1)-1	0(-1)	13	(-1)1	0(-1)	14	(-1)1	
24(12)		55(10) 8(-1)	32(15)		16(8)	9(4)						1(0)			1(-1)		
15	(4)8		16	(3)10		17	(3)10		18	(4)8							
9(2)			9(5)			9(2)			9(2)								

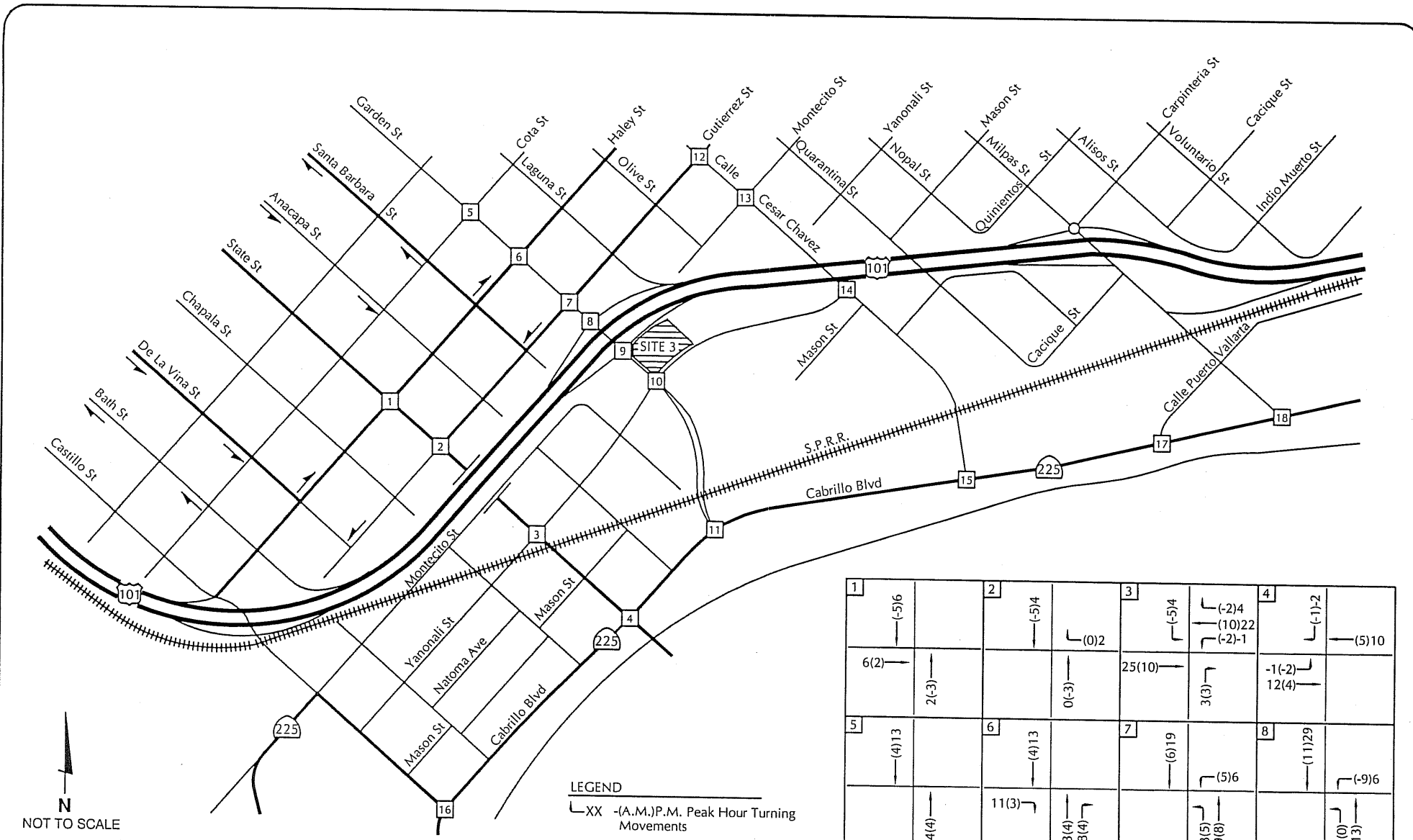


ASSOCIATED TRANSPORTATION ENGINEERS

SITE 3 WEEKEND PEAK HOUR NET PROJECT TRIP ASSIGNMENTS

FIGURE 3.8

JSL #04013

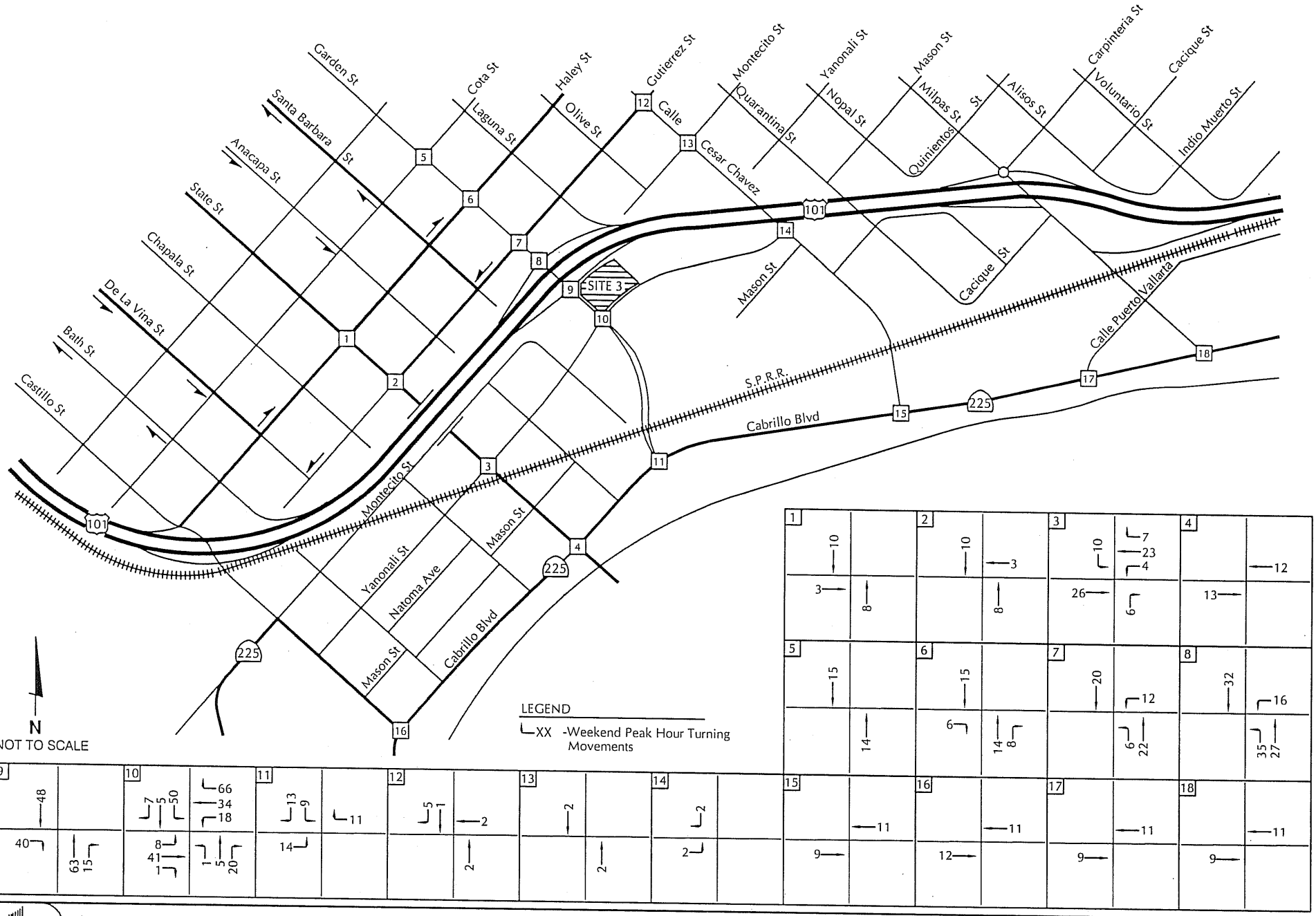


ASSOCIATED TRANSPORTATION ENGINEERS

PASEO DE LA PLAYA WEEKDAY PEAK HOUR NET PROJECT TRIP ASSIGNMENTS

FIGURE 4.1

JSL #04013



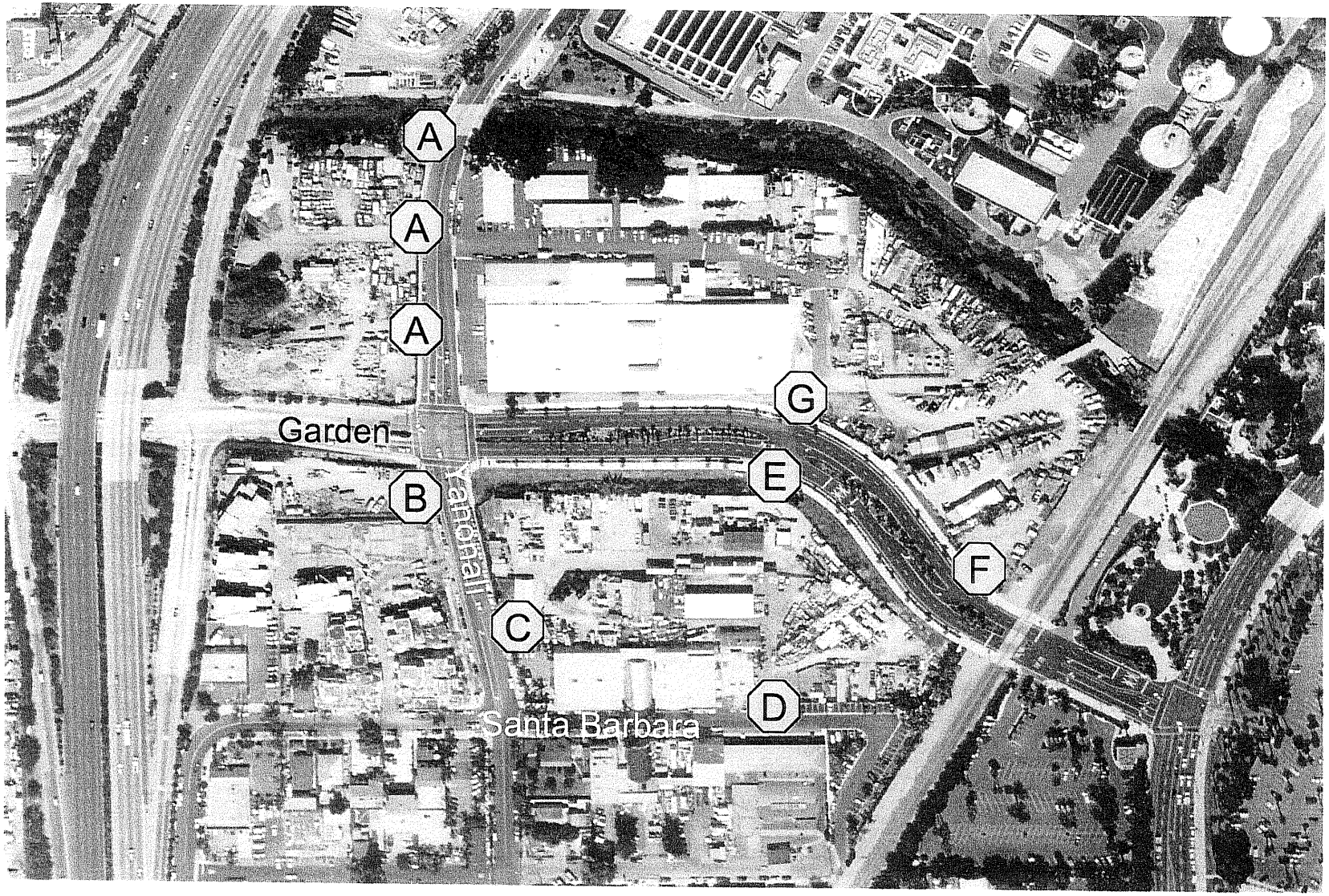
ASSOCIATED TRANSPORTATION ENGINEERS

PASEO DE LA PLAYA WEEKEND PEAK HOUR NET PROJECT TRIP ASSIGNMENTS

FIGURE 4.2

JSL #04013

Figure 5 - Driveway Count Locations



PASEO DE LA PLAYA DRIVEWAY COUNTS

Wednesday 7/06/05 AM												
	A		C		D				E		TOTAL	
TIME					ocean		mountains					
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
7:00-7:15	5	4	0	5	2	8	0	0	2	0	**9**	**17**
7:15-7:30	6	4	10	14	3	0	0	0	2	3	**21**	**21**
7:30-7:45	5	4	1	4	2	4	0	0	4	0	**12**	**12**
7:45-8:00	5	8	4	2	3	2	1	0	0	6	**13**	**18**
8:00-8:15	2	5	2	2	1	0	1	0	0	2	**6**	**9**
8:15-8:30	3	1	3	1	1	1	0	1	0	0	**7**	**4**
8:30-8:45	4	4	0	0	1	3	1	0	2	1	**8**	**8**
8:45-9:00	3	2	0	0	2	2	1	0	0	0	**6**	**4**
PEAK HOUR 7:00-8:00	**21**	**20**	**15**	**25**	**10**	**14**	**1**	**0**	**8**	**9**	**55**	**69**

Wednesday 7/06/05 PM												
	A		C		D				E		TOTAL	
TIME					ocean		mountains					
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
4:00-4:15	3	5	1	1	1	2	1	1	0	0	**6**	**9**
4:15-4:30	8	3	5	2	0	0	2	2	1	0	**16**	**7**
4:30-4:45	3	6	8	6	3	3	0	0	1	2	**15**	**17**
4:45-5:00	4	4	2	3	3	0	0	1	1	0	**10**	**8**
5:00-5:15	1	2	0	3	3	3	0	1	0	0	**4**	**9**
5:15-5:30	1	2	1	0	1	0	1	1	0	1	**4**	**4**
5:30-5:45	0	0	0	1	1	4	0	1	0	1	**1**	**7**
5:45-6:00	0	0	0	0	0	0	0	0	0	0	**0**	**0**
PEAK HOUR 4:00-5:00	**18**	**18**	**16**	**12**	**7**	**5**	**3**	**4**	**3**	**2**	**47**	**41**

See Figure 5 for driveway location map

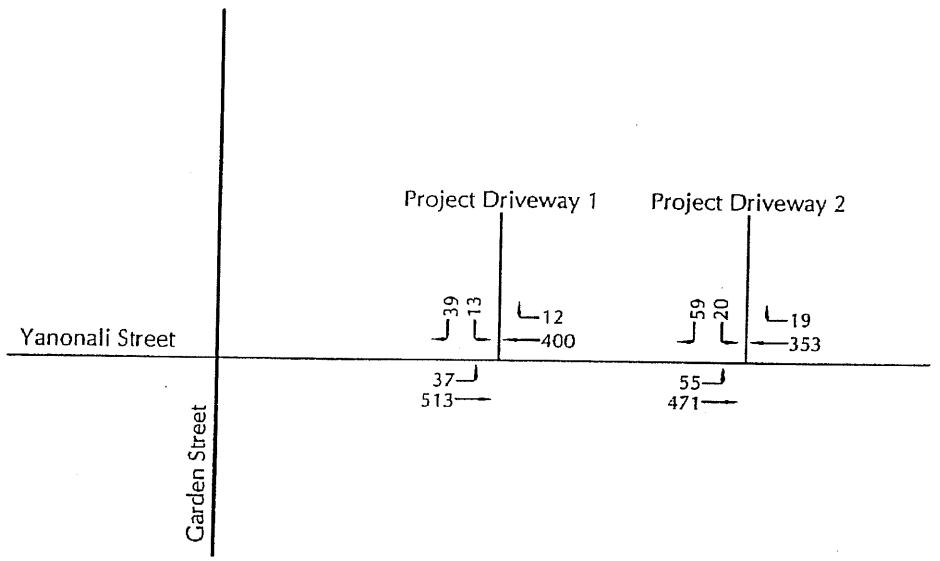
Thursday 7/07/05 AM												
	A		C		D				E		TOTAL	
TIME					ocean		mountains					
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
7:00-7:15	6	4	6	9	2	6	0	0	0	0	**14**	**19**
7:15-7:30	5	2	7	5	3	1	0	0	0	0	**15**	**8**
7:30-7:45	4	3	4	8	5	5	1	0	1	1	**15**	**17**
7:45-8:00	3	1	5	9	0	1	2	0	2	0	**12**	**11**
8:00-8:15	3	6	3	7	0	0	2	1	2	2	**10**	**16**
8:15-8:30	1	1	4	2	1	0	0	2	1	3	**7**	**8**
8:30-8:45	2	2	2	3	3	3	0	0	1	1	**8**	**9**
8:45-9:00	4	1	1	1	1	2	0	0	0	2	**6**	**6**
PEAK HOUR 7:15-8:15	**15**	**12**	**19**	**29**	**8**	**7**	**5**	**1**	**5**	**3**	**52**	**52**

Tuesday/Thursday PM												
	A		C		D				E		TOTAL	
TIME					ocean		mountains					
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
4:00-4:15	6	1	2	1	0	2	2	0	2	2	**12**	**6**
4:15-4:30	2	4	4	3	1	0	2	5	2	0	**11**	**12**
4:30-4:45	2	4	7	4	2	1	0	0	0	1	**11**	**10**
4:45-5:00	1	3	3	8	2	1	3	1	3	0	**12**	**13**
5:00-5:15	1	3	4	1	1	0	2	2	0	0	**8**	**6**
5:15-5:30	0	1	3	6	1	0	0	0	1	1	**5**	**8**
5:30-5:45	0	1	0	2	2	0	0	0	0	4	**2**	**7**
5:45-6:00	0	0	0	0	0	0	1	0	0	0	**1**	**0**
PEAK HOUR 4:00-5:00	**11**	**12**	**16**	**16**	**5**	**4**	**7**	**6**	**7**	**3**	**46**	**41**

See Figure 5 for driveway location map

Sunday 7/10/05 afternoon												
	A		C		D				E		TOTAL	
TIME					ocean		mountains					
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
1:00-1:15	0	0	0	0	0	0	0	1	0	0	**0**	**1**
1:15-1:30	1	1	0	1	0	0	0	0	0	0	**1**	**2**
1:30-1:45	0	0	0	1	0	0	0	0	0	0	**0**	**1**
1:45-2:00	0	0	1	0	1	0	0	0	0	0	**2**	**0**
2:00-2:15	0	0	1	0	0	0	0	0	0	0	**1**	**0**
2:15-2:30	1	1	0	1	1	0	1	1	0	0	**3**	**3**
2:30-2:45	0	0	1	0	1	0	1	1	0	0	**3**	**1**
2:45-3:00	0	0	0	0	1	0	0	0	0	0	**1**	**0**
3:00-3:15	1	1	1	0	0	0	0	1	0	0	**2**	**2**
3:15-3:30	2	0	0	0	0	0	1	0	0	0	**3**	**0**
3:30-3:45	0	1	0	0	0	0	1	1	0	0	**1**	**2**
3:45-4:00	0	1	0	0	0	0	1	1	0	0	**1**	**2**
PEAK HOUR 2:15-3:15	**2**	**2**	**2**	**1**	**3**	**0**	**2**	**3**	**0**	**0**	**9**	**6**

See Figure 5 for driveway location map



LEGEND

XX - P.M. Peak Hour Volume

N

NOT TO SCALE

ASSOCIATED TRANSPORTATION ENGINEERS

SITE 3 DRIVEWAY VOLUMES

FIGURE 6

JSL #04013

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*JUSTIN LINK*	Intersection	*YANONALI ST/SITE 3 DWY*
Agency/Co.	*ATE*	Jurisdiction	*CITY OF SANTA BARBARA*
Date Performed	*1/18/2007*	Analysis Year	*EXISTING + PROJECT*
Analysis Time Period	*P.M. PEAK HOUR*		

Project Description *#04013*

East/West Street: *YANONALI STREET*	North/South Street: *SITE 3 - DWY 2*
Intersection Orientation: *East-West*	Study Period (hrs): *1.00*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*55*	*471*	*0*	*0*	*353*	*19*
Peak-hour factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate (veh/h)	*55*	*471*	*0*	*0*	*353*	*19*
Proportion of heavy vehicles, P_{HV}	*4*	--	--	*0*	--	--
Median type	*Undivided*					
RT Channelized?			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*0*	*0*	*0*	*20*	*0*	*59*
Peak-hour factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate (veh/h)	*0*	*0*	*0*	*20*	*0*	*59*
Proportion of heavy vehicles, P_{HV}	*0*	*0*	*0*	*4*	*0*	*4*
Percent grade (%)		*0*			*0*	
Flared approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized?			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Control Delay, Queue Length, Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*						*LR*	
Volume, v (vph)	*55*						*79*	
Capacity, c_m (vph)	*1176*						*495*	
v/c ratio	*0.05*						*0.16*	
Queue length (95%)	*0.15*						*0.57*	
Control Delay (s/veh)	*8.2*						*13.7*	
LOS	*A*						*B*	
Approach delay (s/veh)	--	--					*13.7*	
Approach LOS	--	--					*B*	

AWD = 11.4 sec = LOS B

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JUSTIN LINK	Intersection	YANONALI ST/SITE 3 DWY
Agency/Co.	ATE	Jurisdiction	CITY OF SANTA BARBARA
Date Performed	1/18/2007	Analysis Year	EXISTING + PROJECT
Analysis Time Period	P.M. PEAK HOUR		

Project Description	#04013
East/West Street:	YANONALI STREET
North/South Street:	SITE 3 - DWY 1
Intersection Orientation:	East-West
Study Period (hrs):	1.00

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	37	513	0	0	400	12
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate (veh/h)	37	513	0	0	400	12
Proportion of heavy vehicles, P_{HV}	4	--	--	0	--	--
Median type	Undivided					
RT Channelized?			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	0	0	0	13	0	39
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate (veh/h)	0	0	0	13	0	39
Proportion of heavy vehicles, P_{HV}	0	0	0	4	0	4
Percent grade (%)		0			0	
Flared approach		N			N	
Storage		0			0	
RT Channelized?			0			0
Lanes	0	0	0	0	0	0
Configuration					LR	

Control Delay, Queue Length, Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT						LR	
Volume, v (vph)	37						52	
Capacity, c_m (vph)	1136						470	
v/c ratio	0.03						0.11	
Queue length (95%)	0.10						0.37	
Control Delay (s/veh)	8.3						13.6	
LOS	A						B	
Approach delay (s/veh)	--	--				13.6		
Approach LOS	--	--				B		

AWD = 11.4 sec = LOS B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3501		1770	3241	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	3501		1770	3241	
Volume (vph)	288	106	21	13	111	301	27	102	8	176	137	176
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	288	106	21	13	111	301	27	102	8	176	137	176
RTOR Reduction (vph)	0	0	13	0	0	252	0	6	0	0	106	0
Lane Group Flow (vph)	288	106	8	13	111	49	27	104	0	176	207	0
Turn Type	Prot		Perm	Prot		Perm	Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	16.8	29.0	29.0	0.8	13.0	13.0	2.3	22.0		12.2	31.9	
Effective Green, g (s)	16.8	29.0	29.0	0.8	13.0	13.0	2.3	22.0		12.2	31.9	
Actuated g/C Ratio	0.21	0.36	0.36	0.01	0.16	0.16	0.03	0.28		0.15	0.40	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	372	675	574	18	303	257	51	963		270	1292	
v/s Ratio Prot	c0.16	0.06		0.01	c0.06		0.02	0.03		c0.10	c0.06	
v/s Ratio Perm			0.00			0.03						
v/c Ratio	0.77	0.16	0.01	0.72	0.37	0.19	0.53	0.11		0.65	0.16	
Uniform Delay, d1	29.8	17.2	16.3	39.5	29.8	29.0	38.3	21.7		31.9	15.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	9.7	0.1	0.0	87.1	0.8	0.4	9.6	0.2		5.5	0.3	
Delay (s)	39.5	17.3	16.3	126.5	30.6	29.3	47.9	21.9		37.4	15.7	
Level of Service	D	B	B	F	C	C	D	C		D	B	
Approach Delay (s)		32.7			32.6			27.0			23.5	
Approach LOS		C			C			C			C	

Intersection Summary

HCM Average Control Delay	29.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	47.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	288	106	21	13	111	301	27	110	176	313
v/c Ratio	0.77	0.16	0.04	0.15	0.49	0.66	0.21	0.10	0.65	0.19
Control Delay	44.0	16.9	7.0	40.2	39.5	11.6	39.3	21.7	43.2	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.0	16.9	7.0	40.2	39.5	11.6	39.3	21.7	43.2	7.7
Queue Length 50th (ft)	135	33	0	6	53	0	13	19	83	17
Queue Length 95th (ft)	212	69	14	24	97	66	38	43	145	54
Internal Link Dist (ft)		721			120			1740		1450
Turn Bay Length (ft)	220		150	95		95	120		230	
Base Capacity (vph)	443	717	622	89	303	509	128	1108	316	1613
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	0.15	0.03	0.15	0.37	0.59	0.21	0.10	0.56	0.19

Intersection Summary

Garden St. / Project dwy
Site 1 / P.M. Peak Hour

Figure 4C-101. Traffic Signal Warrants Worksheet (Sheet 2 of 4)

WARRANT 2 - Four Hour Vehicular Volume SATISFIED* YES ☐ NO ☐

Record hourly vehicular volumes for four hours.

APPROACH LANES	One	2 or More	/	/	/	Hour
Both Approaches - Major Street						
Highest Approaches - Minor Street						

*All plotted points fall above the curves in MUTCD Figure 4C-1 or 4C-2. Yes ☐ No ☐

WARRANT 3 - Peak Hour PART A or PART B SATISFIED YES ☐ NO ☒

PART A SATISFIED YES ☐ NO ☒

(All parts 1, 2, and 3 below must be satisfied)

1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceedds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach; AND — Yes ☐ No ☒
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — Yes ☐ No ☒
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaoches. — Yes ☐ No ☒

PART B SATISFIED YES ☐ NO ☒

APPROACH LANES	One	2 or More	PM Peak Hour	/	/	Hour
Both Approaches - Major Street		X	744			
Highest Approaches - Minor Street	X		25			

15 max

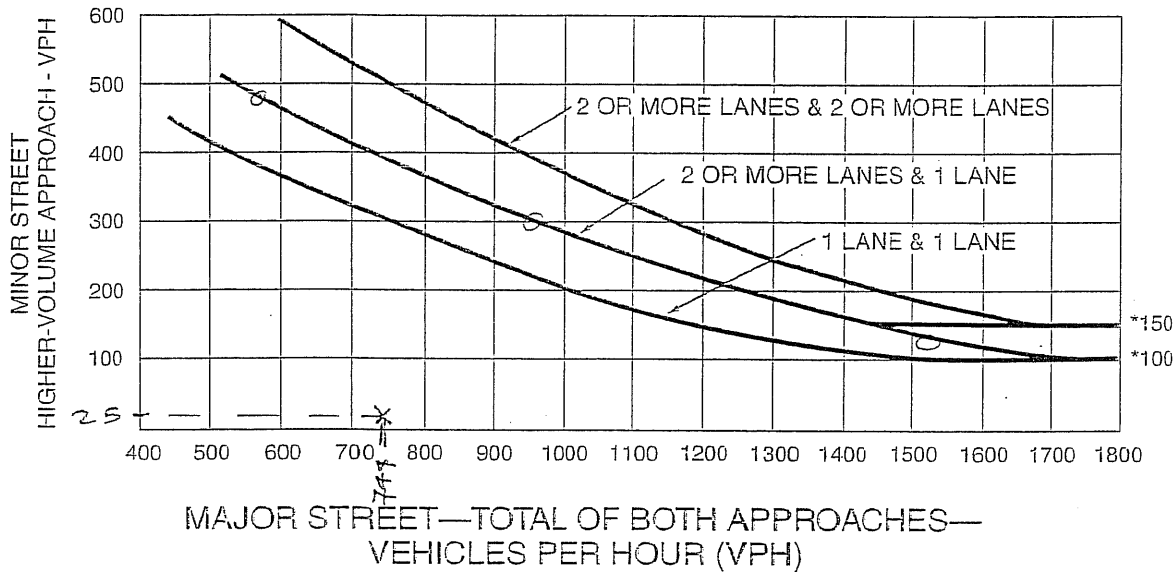
EAST DWY
Project dwy

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume vehicle minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above the applicable curves in MUTCD Figure 4C-3 or 4C-4.

Garden St / Project Dwy
Site 1

Figure 4C-3. Warrant 3, Peak Hour

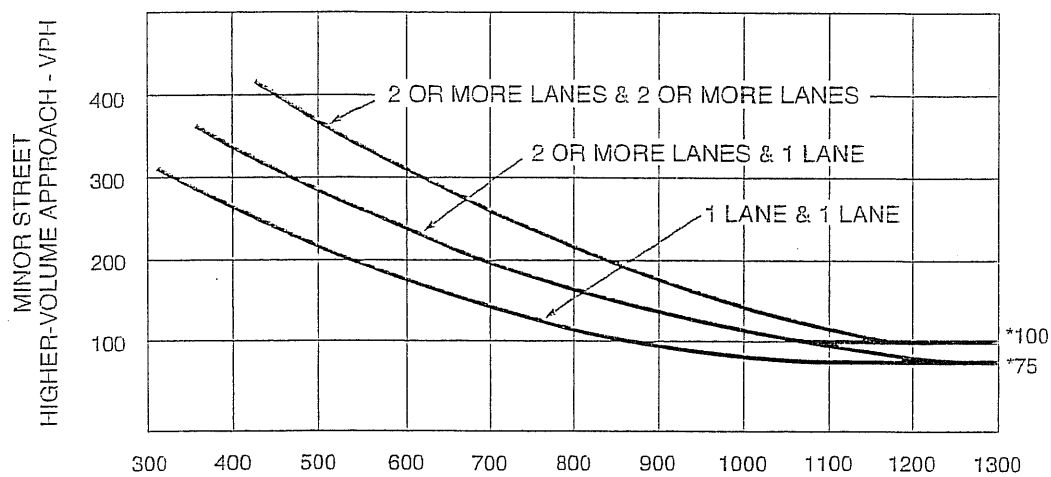
For Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE ~~70~~ 64 km/h OR ABOVE 40 mph ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

ITE SHARED PARKING DEMAND CALCULATIONS

#04013

WEEKDAY - AVERAGE RATES

Land Use	*Size*		*Rate*	*Peak Demand*	*Captive Ratio*
Supermarket	19.466	ksf	4.36	85	0%
Retail	4.747	ksf	3.02	14	10%
Restaurant	3.036	ksf	10.10	31	10%
Office	5.406	ksf	2.84	16	0%
Mini-Storage	11.903	ksf	0.16	2	0%

Hour of Day	Supermarket	Retail	Restaurant	Office	Mini-Storage	Total
6:00 a.m.	0	0	7	1	0	8
7:00 a.m.	0	1	14	9	1	24
8:00 a.m.	0	2	17	14	0	33
9:00 a.m.	0	5	21	16	1	42
10:00 a.m.	49	8	23	16	2	99
11:00 a.m.	56	11	25	16	2	110
12:00 noon	79	12	28	14	1	134
1:00 p.m.	**85**	**13**	**25**	**12**	**1**	**136**
2:00 p.m.	76	12	14	13	1	116
3:00 p.m.	80	12	12	14	1	119
4:00 p.m.	82	12	12	12	2	120
5:00 p.m.	70	12	21	7	1	110
6:00 p.m.	53	12	22	3	1	91
7:00 p.m.	40	12	22	0	1	75
8:00 p.m.	0	10	22	0	0	32
9:00 p.m.	0	6	17	0	0	23
10:00 p.m.	0	4	15	0	0	19
11:00 p.m.	0	1	14	0	0	15
12:00 midnight	0	0	7	0	0	7

Source: ITE Parking Generation 3rd Edition, 2004; ULI Shared Parking 2nd Edition, 2005

ITE SHARED PARKING DEMAND CALCULATIONS

#04013

WEEKEND - AVERAGE RATES

Land Use	*Size*		*Rate*	*Peak Demand*	*Captive Ratio*
Supermarket	19.466	ksf	4.75	92	0%
Retail	4.747	ksf	2.97	14	10%
Restaurant	3.036	ksf	13.50	41	10%
Office	5.406	ksf	0.35	2	0%
Mini-Storage	11.903	ksf	0.06	1	0%

Hour of Day	Supermarket	Retail	Restaurant	Office	Mini-Storage	Total
6:00 a.m.	0	0	4	0	0	4
7:00 a.m.	0	1	9	0	0	10
8:00 a.m.	0	1	17	1	0	19
9:00 a.m.	0	4	26	2	1	33
10:00 a.m.	0	6	33	2	1	43
11:00 a.m.	0	8	33	2	1	44
12:00 noon	84	10	37	2	1	134
1:00 p.m.	**92**	**11**	**31**	**2**	**0**	**137**
2:00 p.m.	88	13	24	1	0	126
3:00 p.m.	91	13	15	1	0	119
4:00 p.m.	82	11	17	0	1	111
5:00 p.m.	67	11	22	0	0	100
6:00 p.m.	67	10	26	0	0	103
7:00 p.m.	0	10	26	0	0	35
8:00 p.m.	0	8	24	0	0	32
9:00 p.m.	0	6	11	0	0	17
10:00 p.m.	0	4	9	0	0	14
11:00 p.m.	0	2	6	0	0	7
12:00 midnight	0	0	4	0	0	4

Source: ITE Parking Generation 3rd Edition, 2004; ULI Shared Parking 2nd Edition, 2005

P.M. Peak Hour Condominium Trip Generation Rates

Study Site	Size	P.M. PHT	
		Trips	Rate
San Remo Condominiums (San Remo Drive)	51 Units	30 Trips	0.59/Unit
Stonecreek Condominiums (Las Positas Road)	105 Units	67 Trips	0.67/Unit
The Grove (Hollister Avenue)	178 Units	92 Trips	0.52/Unit
Villa del Mar Condominiums (Yanonali Street)	40 units	15 Trips	0.38/Unit
Average Rate			**0.54/Unit**
ITE Condominium Rate			**0.52/Unit**
ITE Single Family Rate			**1.01/Unit**